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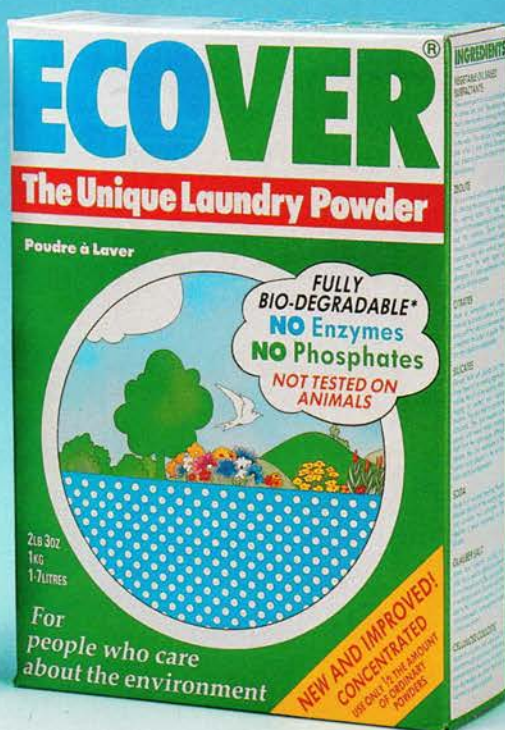
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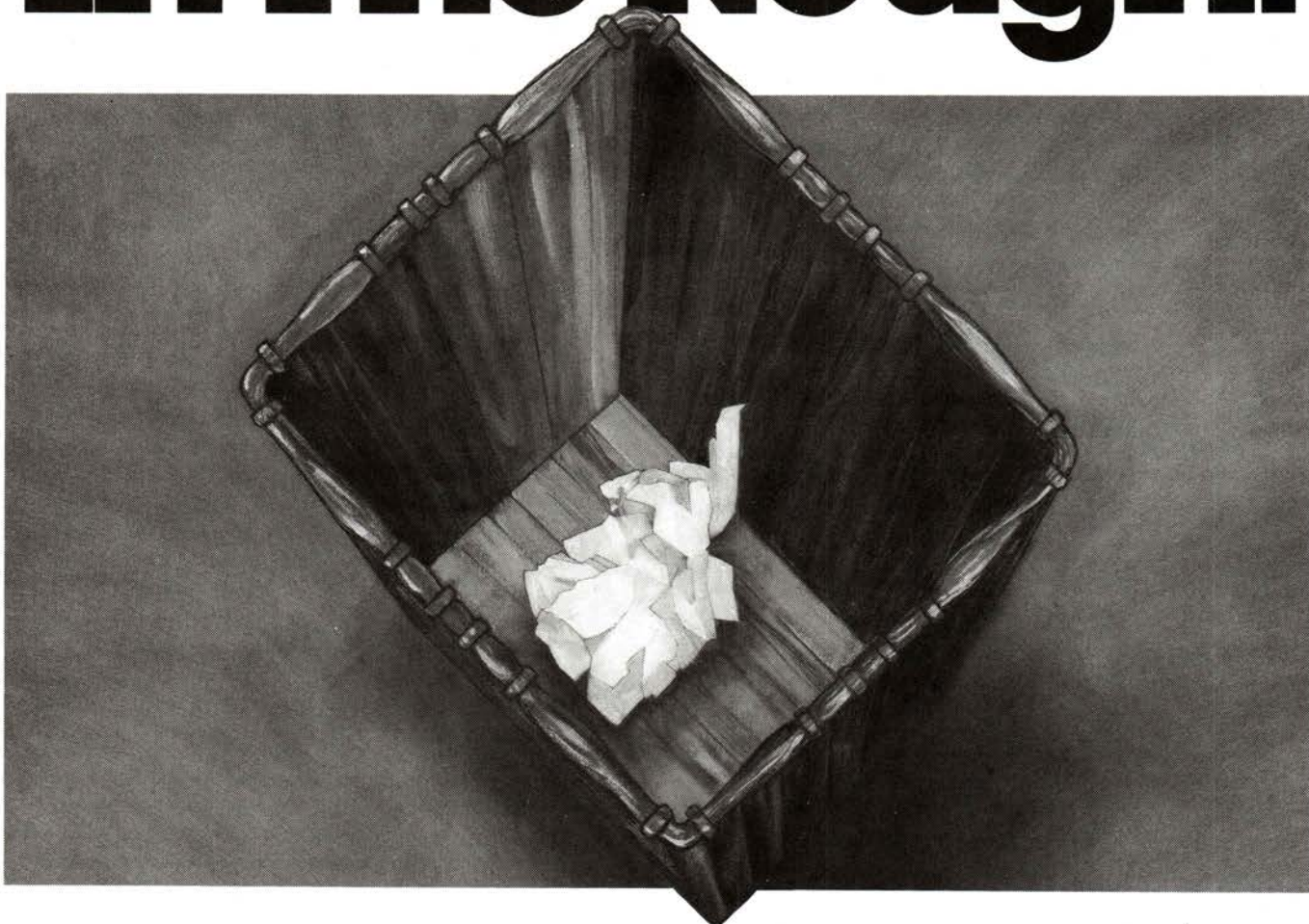
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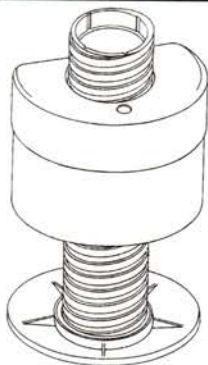
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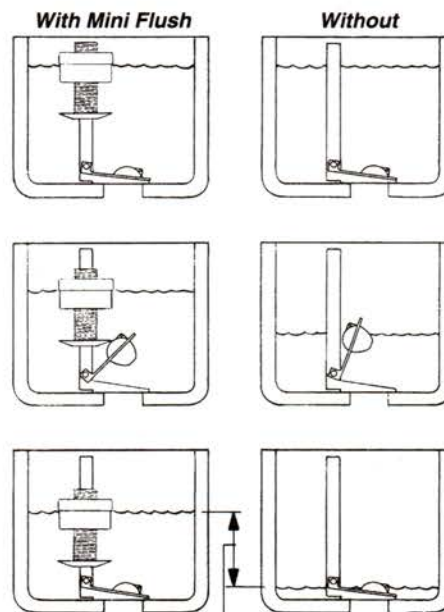
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November/December 1990

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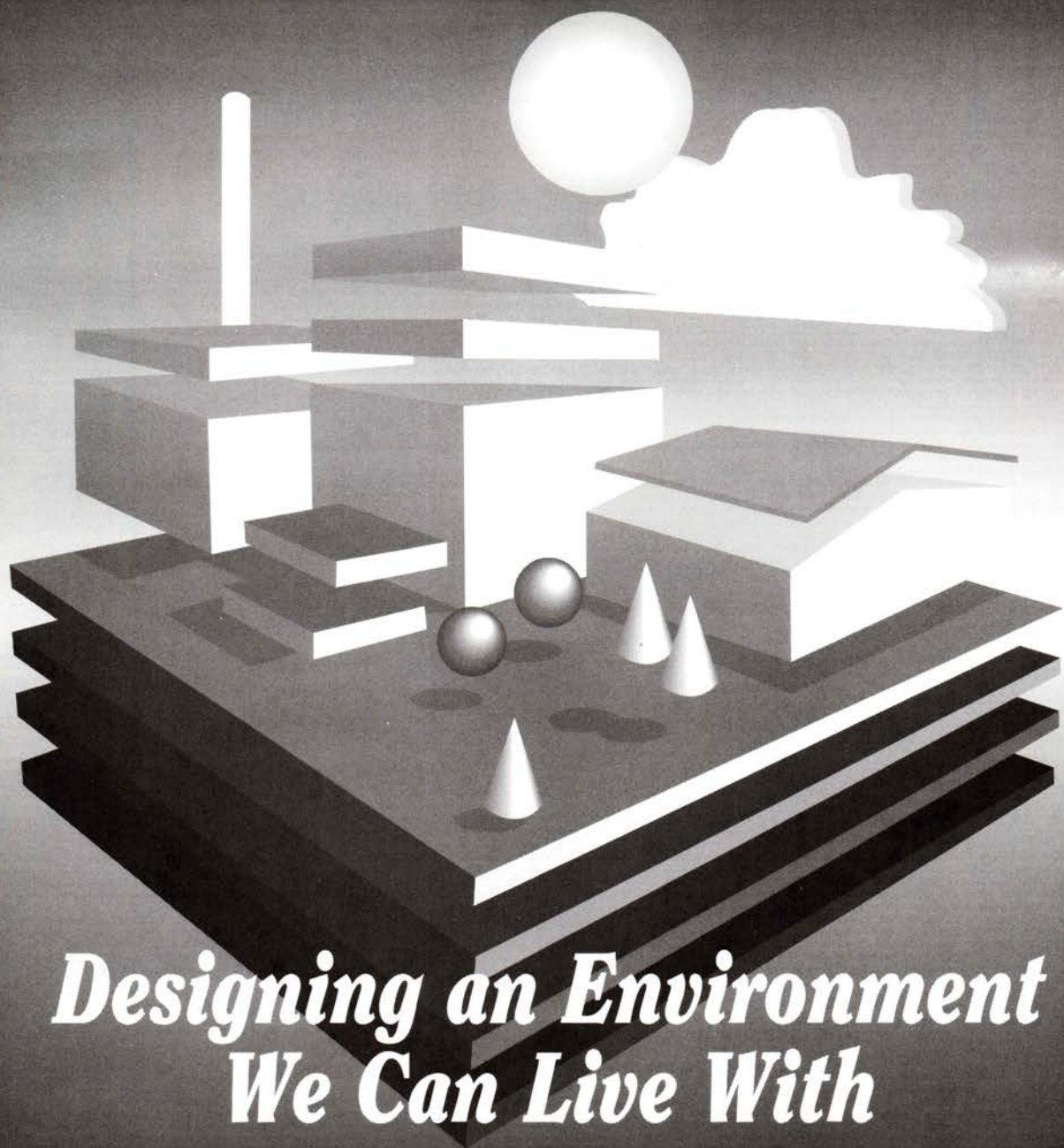
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TRASH

Late in the summer of 1989, a small group of climbers and skiers collected a harvest of trash from the high slopes near the glacier above Chamonix in the French Alps. They transformed the discards of other skiers and climbers into a symbolic "Sculpture Geante de Detritus," a giant sculpture of garbage.

"It is there now," writes Nadege Chable, "imposing and symbolic. It represents what human beings are doing to the earth."

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Garbage and Old Houses

Just got asked, "What magazine does **GARBAGE** most resemble?" I'm sure the interviewer was looking for the name of a science or environmental magazine. But the answer, really, is *Old-House Journal*.

Huh? **GARBAGE** is most like a magazine about fixing old buildings?

Yes, for a good reason: They come from the same company. The subjects may be different, but the presentation is similar. They share the same world view, the same sense of personal responsibility, the same longing for the voices of reason. And they are both practical, down-to-earth, spirited.

Some thing that strikes me is the similarity in vocabulary. Essential to both fields are the words *preservation* (of buildings/of wilderness), *conservation* (of historic materials/of energy), *recycling* (of a building or its parts/of a commodity or its materials), *restoration* (of a damaged house/of a ravaged ecosystem). The same topics appear in both fields: Acid rain destroys limestone buildings even as it destroys lakes.

Something else that strikes me is the image problems both fields have faced. Preserving old buildings, while far from a safe bet, is nevertheless practically a mainstream concern now. But I remember the days, not so long ago, when preservation was considered elitest at best and society-page trivia at worst. Preservationists were pictured as well-to-do ladies with blue hair and tennis shoes. Preservationists were viewed as extremists who would lie down in front of bulldozers in an emotional overreaction to progress.

If preservationists had to fight the blue-haired-ladies image, environmentalists have had to fight the granola-crunching image. The image that environmentalists like animals better than people. That they are emotional extremists. That conservation and environmentalism are antithetical to business and progress.

Back to the humble history of *Old-House Journal*. We didn't set out to fix an image problem. We just wanted to offer nitty-gritty advice about how to restore

older buildings. But the hammer-and-nails approach acted as a bridge. Fifty-two percent of the readers were men. Thirty percent were contractors or architects. I found myself clomping around a work site in a hard hat one day, sipping cocktails with architectural historians the next.

These days, out in the field for **GARBAGE**, I can't ignore the similarities to my old job at *OHJ*. At one seminar I am with publishers' production managers (there to learn about recycled paper). On another day I am dodging dumptrucks on a tour of an intermediate recycling facility. Then there is an uptown luncheon, in a room filled with corporate image consultants.

It amuses me that both fields are full of suspicion about "motivation." Both fields started with true believers, I guess, and the irony is that the inner circle is never big enough to make a strong impact on the world. I remember when big restoration projects became headline news because tax laws began to favor restoration. Long-time preservationists screamed that the only reason developers had "gotten religion" was for money. (This is a surprise?) Now that corporate officials are worried about environmental correctness, some environmentalists are screaming that they only care about their image. Money — or, more correctly, keeping up with the customers and staying in business — is going to be a primary force for change that benefits the environment.

These days, I get letters telling me that **GARBAGE** is for wacko environmentalists. I also get letters telling me that **GARBAGE** is in bed with big corporate advertisers. It reminds me of the early days of *OHJ*, when the magazine was called both "too purist" in its approach to restoration and also "too mass-market." Then as now, I figure we're doing something right if both sides are slinging insults at us.

Patricia Poore
Editor

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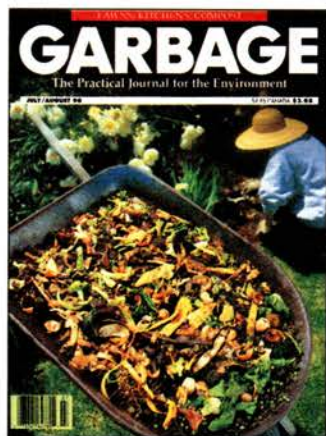
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Compostable Quotables

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CULLED FROM THE KITCHEN

We appreciated David Goldbeck's "Toward the Next Kitchen" in the July/August issue; many of Mr. Goldbeck's ideas reflect features of our 1840s kitchen, now much updated. We make extensive use of our pantry, and its former icebox serves as a cool, dark storage cabinet. But Mr. Goldbeck's statement that you cannot buy a stove that contains both a gas cooktop and electric oven is incorrect. We own a Jenn-Air Model SEG196 range that has an electric convec-

tion oven and four gas cooktop burners. Energy use was one of the factors in our choice of the Jenn-Air. In southern New Hampshire, electricity is more costly both on a cents-per-heat-unit basis, and in terms of the Seabrook nuclear plant's impact on the environment.

Barbara and Richard Binder
Nashua, N.H.

AIR-POLLUTING FAMILY FEUD

I was extremely disappointed with your presentation of "Confessions of an Air-Polluting Family"

(Originally titled "One Family's Pollution," and published in *Solid Waste & Power*) featured in the centerfold of your July/August edition.

As the author of the article, I wanted to show your readers how pollution can be placed in easy-to-understand terms and how we as a society create pollution by our own lifestyles.

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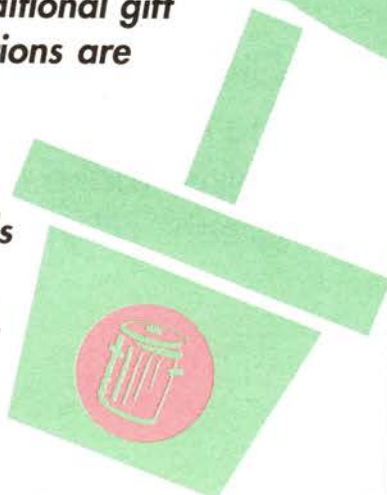


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printing it in "tabloid form," thereby hiding the environmental message. I deeply regret that your magazine apparently has very little concern for the environment by its poor presentation of important and pertinent issues.

Norman Getz
Watertown, Mass.

THOUGHTS ON LAWNS

As a professional maintenance gardener, I read your recent article on natural lawn care with some interest. However, your article left out some very basic information. Aerating and dethatching are crucial to lawn maintenance. Aerating reduces water waste and

water stress, preventing insect infestations, especially of grubs. Thatch buildup, removed by dethatching, prevents water and fertilizer from reaching the soil, and provides an ideal environment for fungi. You can't win if you try to manage a lawn, organic or not, without aerating and dethatching.

Regina Johnson
Redwood City, Calif.

You're right! Thanks for raising these points which space restrictions prevented us from addressing.

— the editors

GARBAGE magazine is absolutely the BEST! In response to "Natural Lawn Care," July/August, I ask,

why wage battle against the golden-helmeted soldiers [dandelions] marching across your lawn? Rich in vitamins and minerals, many parts can be used on your dinner table. Leaves, flowers, and root crowns make tasty fresh vegetables; young leaves and flowers brighten any salad. The roots can be dried and ground to make "coffee," and who hasn't heard of dandelion wine? My backyard's a salad bowl!

Margaret W. Etheredge
Ellore, S.C.

COSMETICS DIFFERENCES

Your article titled "Natural vs. Synthetics, Personal Hygiene

Products" by Francesca Lyman, which appeared in the July/August 1990 issue of **GARBAGE**, unfortunately contained several erroneous statements. In addition, I was seriously misquoted.

Nowhere in my conversation with Ms. Lyman did the following statement or implication arise: "CTFA questions the need for increased participation [in injury reporting by companies]." In fact, I said that while we believe the Voluntary Reporting Program is effective, we are continuing our efforts to increase participation levels.

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product ingredients." In our discussion about product efficacy at the beginning of the conversation, I stated that "CTFA did not study or have data on the efficacy of specific products. Therefore, I could not discuss this subject."

Ms. Lyman implies that CTFA has something to hide when in fact FDA has a comparable statutory power for cosmetics as it does for foods and OTC drugs. Roughly 60 percent of the manufacturers in our industry are registered with the agency. More than 20,000 cosmetic formulations are on file with FDA, and the companies that submit adverse experience reports to FDA

account for about 80 percent of the cosmetics marketed. We voluntarily register our facilities and give FDA lists of our products and of their ingredients. And we've voluntarily submitted injury reports since the early 1970s.

Finally, I said that our country has real problems — cancer, Alzheimer's and AIDS — that need FDA's attention and our tax dollars. And that the cosmetic industry has a terrific safety record. For years, FDA commissioners have said that cosmetics are the safest products the agency regulates.

The entire tone of this article, along with the misinformation and

misquotes, is a real disservice to your readers. As a consumer publication, you have an obligation to provide your readers with accurate information.

Elaine B. Kite
Assoc. Director-Public Affairs
The Cosmetic, Toiletry and
Fragrance Association
Washington, D.C.

Bill Breen, senior editor of **GARBAGE**, did the interview with Ms. Kite. After a review of the notes from that interview, we stand by the story as quoted. The "CTFA questions the need for increased participation [in injury reporting]" statement is backed by the General Accounting Office's report on cosmetics regulation. Also, the article notes CTFA's claim

that the FDA's resources should be concentrated on other health issues.

— the editors

CORRECTION

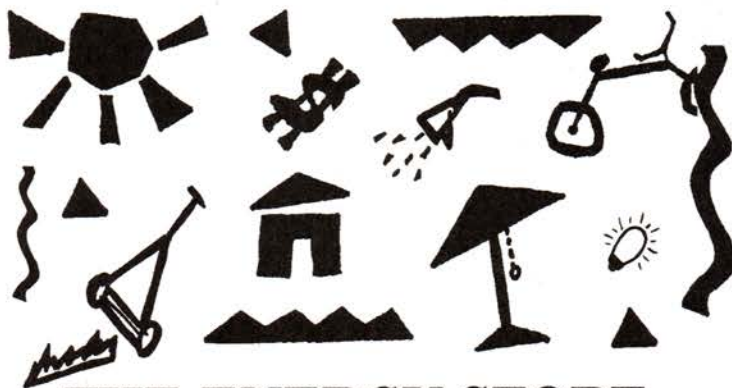
Marin County's 88,000 households produce 259 metric tons of household hazardous waste per year ("The History of Garbage," Sept/Oct). The county's total solid-waste production is 64,700 tons.

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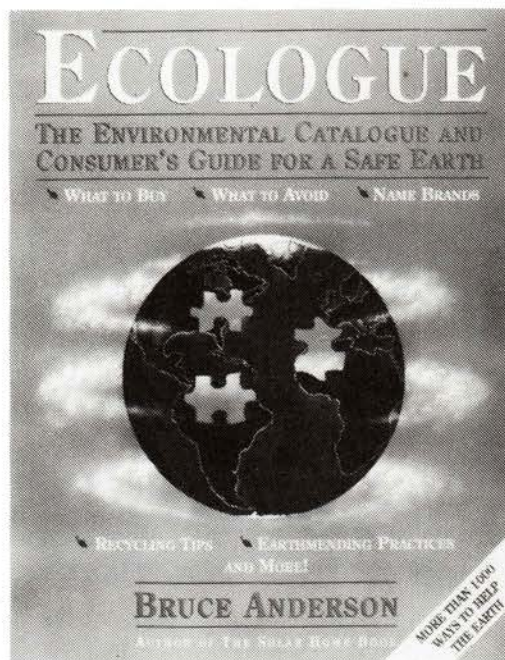
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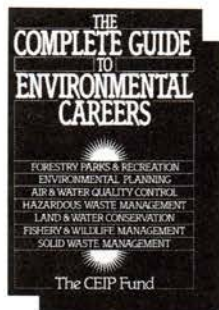
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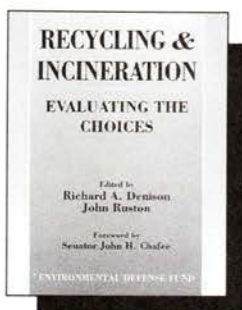


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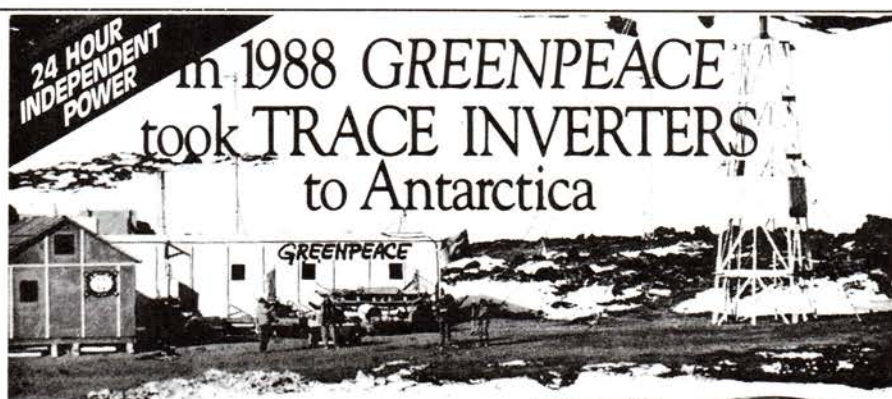
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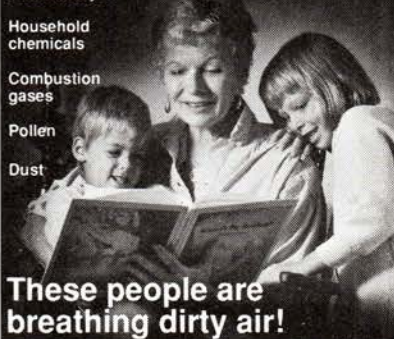
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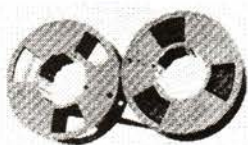


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50,000 Cans of Beer on the Wall

PROFILE

For many Americans, saving cans bound for local recycling centers has become routine social responsibility. But back when beer cans were destined for trash cans, amassing the aluminum at home was considered nothing short of eccentric. Just ask Mary Milkovich.

Twenty years ago, when her husband John began storing empty beer cans in the attic and garage of their Houston, Texas, house, Mary wondered what was brewing. Today, the 73-year-old retired beauty consultant recalls getting only a vague response when she'd ask John about his plans for the beer cans he'd stack unobtrusively in boxes and oversized plastic bags. "I don't know," he'd say. "But I'll find a use for [the cans]"

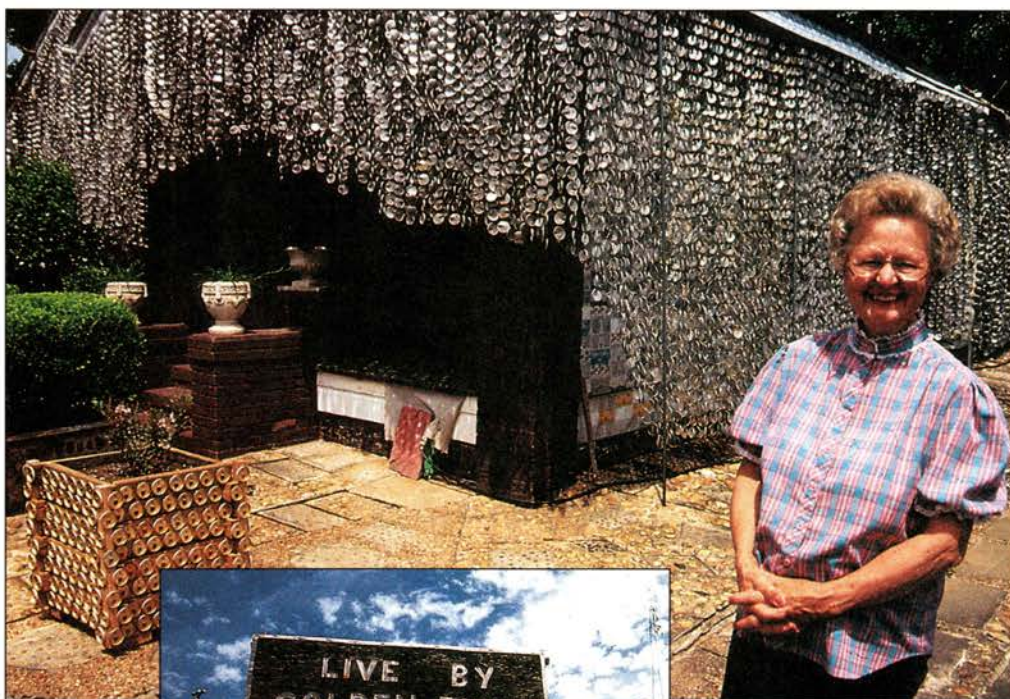
someday." Stashing thousands of cans of Budweiser was no sweat for a man who, according to Mary, believed "beer cured everything." Ultimately, the 50,000 cans John drank his way through were reincarnated as aluminum siding and fencing for the couple's three-bedroom ranch house.

John constructed and mounted the siding and fencing entirely on his own during a span of 18 years. The project was completed just before his death two years ago at the age of 75. As it turned out, John's growing aversion to house painting provided the inspiration for the whimsical facade. By Mary's account, John initially tackled his new project a few hours every day. After retiring from his job as a leather upholsterer for the Southern Pacific Railroad, he began working full-time on what was to become the quintessential low-maintenance home.

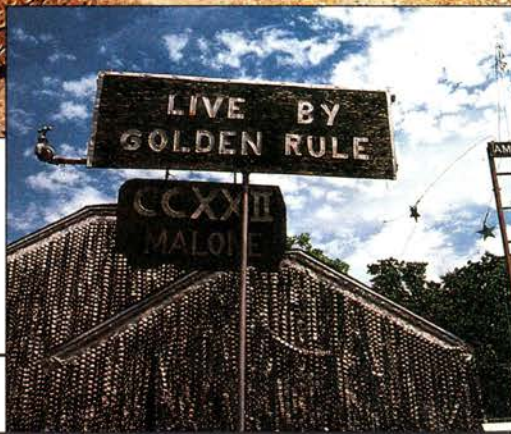
John made the siding by first removing the tops and bottoms of cans, slitting the bodies, and assembling them with pins and wire into expansive sheets. He then layered the homemade sheets onto metal backing with aluminum tacks, and mounted the siding on the pre-existing wood. Insulation was placed between the old and new surfaces. Instead of throwing away the cans' tops and bottoms, John sewed them into decorative streamers of wind chimes and hung them from the eaves of the house. The remaining cans were placed one inside the other to form the slats for a small, sturdy fence supported by wood planks.

For Mary Milkovich, life in the media-dubbed "beer-can" house has been a project in itself. Even before the siding was fully installed, Mary's

Mary Milkovich and her beer can house — an unparalleled recycling feat.



JAMIE TRACEY REINBERG



previously unassuming home began turning quite a few heads in Houston. Representatives from local TV stations and magazines frequently come by to photograph the house; area tour buses make it a pitstop in their routes. "I've heard some people say it's the best thing they've seen in Houston," enthuses Mary. The Milkovich home has even caught the eye of a Rice University art historian who asks his students to view the house as exemplary folk art. And Mary adds thankfully, "even the neighbors like it."

In the midst of all the hype, no one has noted that the Milkovich house is a recycling feat nonpareil. In his efforts to avoid the drudgery of regular repainting, John Milkovich kept thousands of cans from going to the local landfill or to an energy-consuming recycling facility. He also helped cut down on the pollution and waste generated from the use of oil-based house

paints. As if that weren't enough, the superior insulation provided by the siding has cut Mary's heating and air-conditioning bills by 20 to 30 percent, amounting to even more energy savings (not to mention reduced carbon-dioxide emission).

All told, John Milkovich's appetite for beer and distaste for painting paid off in ways his wife never expected. In addition to the money savings, Mary delights in all the attention the house has received. "Busloads of tourists come by and talk to me, and I've met a lot of nice people from all over the world."

—Ginia Bellafante

FOR THE RECORD

"As more people eat high-fiber foods, the gas blasted into the atmosphere is increasing dramatically."

Robert Park of Scotland's Rowett Research Institute warning that human flatulence is driving up the Earth's temperature. (*Examiner*, June)

All Wrapped Up in Green

As products with specious "eco-friendly" claims multiply on store shelves, the need for substantiated product information has intensified. Fortunately, "green" consumers may soon have more information to go on when making choices at the supermarket.

Last April, two nonprofit groups, the Oakland, California-based Green Cross, and the Washington, D.C.-based Green Seal, organized in an attempt to guide shoppers toward products they designate as *justifiably* preferable. Employing different procedures, both groups analyze products and consequently award seals of approval to those that have met a pre-determined set of environmental-impact standards. Items deemed acceptable are then permitted to bear the Green Cross or Green Seal labels (*right*). In both cases, manufacturers wishing to receive the seals must pay for all testing.

Green Cross validates *specific* product claims, such as "this paper bag is constructed from 40-percent post-consumer

material." The organization does not endorse products. So far, Green Cross has focused on researching only paper, plastic, and wood products claiming to contain recycled materials, and soaps, detergents, and cleansers marketed as biodegradable.

To receive the Green Cross, manufacturers of recycled items must include the highest possible percentage of recycled content in their products. (Maximum recycled-content standards differ from industry to industry.) Green Cross also requires soaps and detergents to break down into carbon dioxide and water under aerobic and anaerobic conditions.

To date, the Oakland organization has certified 50 supermarket items, including: 100-percent recycled paper towels, napkins, facial tissues, and bath tissues marketed under various brand names by the companies Pope & Talbot, Orchids Paper Products Co., and Confab; plastic trash, lawn, and leaf bags from Webster Industries containing up to 80-percent recycled plastic (including 24-percent post-consumer



FOR THE RECORD

“At television stations across the country, weathercasters are being reconstituted as ‘environmental reporters.’”

Gar Smith, editor of
Earth Island Journal (Media File, April/May)

waste); and Green Field Inc. campfire logs made from 100-percent-recycled wood waste.

While the paper towels and plastic leaf bags certified by Green Cross bear legitimate claims of recycled content, they aren't the smartest choices when you consider that throwaway towels could be substituted with reusable cloth, and leaves could easily be composted. Green Cross

recognizes that the towels “aren't the greatest thing for the environment since sliced bread, but people do use them and we want them to know there are options out there,” says Vice President Linda Brown. “[The manufacturers] are pulling material out of the wastestream that would otherwise go into landfills or incinerators.”

Rather than examine individual claims, Green Seal, founded by former Earth Day Chairman Denis Hayes and one-time National Wildlife Federation Legal Director Norman Dean, will conduct life cycle analyses to measure the *full* environmental impact of products, from manufacture through disposal. Scientific studies will examine a product's energy efficiency; its

contribution to water, toxic, and radioactive pollution; and its reliance on water and other natural resources.

While the cradle-to-grave approach proffered by Green Seal is more comprehensive, the science of product life-cycle analysis is still new and complex. How a study weighs *all* of a product's environmental impacts, from the resources expended in making the product to the pollutants released in its disposal, will prove technically daunting, according to researchers.

Green-labeling programs can help you make informed decisions in the marketplace if you know something about the standards used to judge products. You can find out how and why Green Cross devised its standards by calling their toll-free hotline, (800) 829-1415. When products bearing the Green Seal begin appearing on store shelves early next year, environmental-impact criteria will be made available to the media and to retail stores.

—Ginia Bellafante

• EPA Psych-Out

Photocopy everything. Kill trees while you work. Use toxic chemical pesticides. Leave lights on, especially when you're not home. These are just some of the New England Office of the Environmental Protection Agency's acerbically

GARBAGE DICTIONARY

Trash Fish, noun. Freshwater species including longnose suckers, pumpkinseed sunfish, brown bullheads, creek chubs, and cutlips minnows. Anglers call them trash because they don't fight and they don't taste good, and they crowd out the fish that do (read brook trout). In New York State's Adirondack wilderness, the abundance of trash fish in backwoods ponds has made for some pretty poor fishing. So the State Department of Environmental Conservation has decided to trash them.

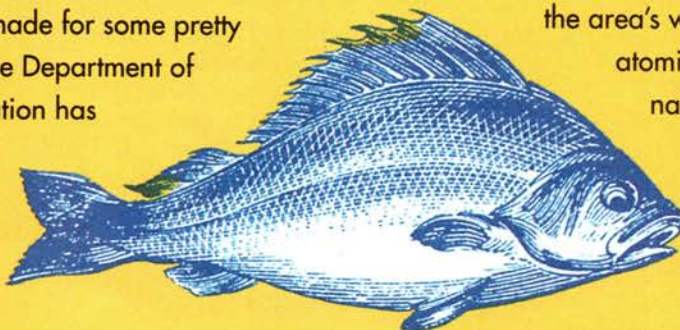
Last September, the state's environmental agency began

poisoning six Adirondack ponds with rotenone and restocking them with brook trout. Rotenone paralyzes the gills of the fish, preventing the flow of oxygen into its bloodstream.

The project has infuriated environmentalists. They argue that the state is violating its own management guidelines for the Adirondack wilderness, which call for the promotion of *all* natural aquatic communities.

Most of the so-called trash fish are native to the area's waters. “We're taking an atomic-bomb approach to sacrificing native species,” says Mike DiNunzio of the Adirondack Council, “simply for the benefit of fishermen.”

—Bill Breen



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FOR THE RECORD

"If the road to Hell is paved with good intentions, then Brazil is somewhere in the vicinity of Purgatory."

From a story on Brazil's use of DDT to control malaria. (*World Watch*, July/August)

toned "tips" to save the planet. Designed by the Boston advertising firm of Cosmopolos, Crowley & Daly, the new environmental-awareness campaign employs reverse psychology to give the post-Earth Day message an irreverent twist. Print, TV, and radio ads encourage New Englanders to call a toll-free number (800-SAVE IT) for

the booklet *How to Destroy the Earth*, which touts practical advice on everyday changes we can make to protect the planet. The EPA inaugurated the campaign in early June, and 2,000 leaflets were scooped up by mid August. The ads should continue through May 1991.

• Organic Foods Defined?

Last fall we reported on the murky state of organic-food laws (see "Organic Foods: Are you Getting What You Pay for?" Sept/Oct '89). Since then, five more states have promulgated their own standards for labeling or certifying organically grown foods. Yet in the absence of federal regulation outlining a comprehensive definition for organic food, consumer confusion over what constitutes "organic" has

run rampant. As it stands, an apple grown organically in Massachusetts may not qualify as such in Texas.

All that is likely to change. Last July, Congress passed an amendment to the 1990 Farm Bill which clearly stipulates how foods should be grown organically. By 1993, only those foods grown on farms that have been herbicide, fungicide, and insecticide free for three years will be marketed as organic. State departments of agriculture and private organic-food certification agencies will be charged with enforcing the law.

• CD Makers Changing Their Tune

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designed to fit the 6-by-12-inch paper-board casing, any change in packaging must be industry wide. Even though the wasteful longbox doesn't strike the right chords with eco-savvy music fans, major record companies were still favoring the status quo.

At the New Music Seminar, an industry conference held last July in New York City, recording executives began playing a different tune. *Billboard* quoted Cindy Barr, chief buyer for Miami's Spec's Music & Video, as telling the conference that "inevitably, there will be no longbox." Many execs agreed that as soon as new packaging is standardized, the longbox will disappear. To help store-owners defray the cost of redesigning shelves, Rykodisc, a Minneapolis-based label, is offering retailers a 20-cent discount on each CD ordered — minus the longbox. Rykodisc has sent a proposal to major labels asking them to consider adopting a similar strategy.

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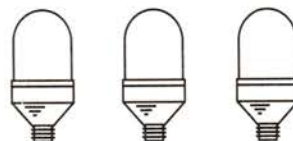
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• Greywater Gets a Go-ahead

California's water-conservation officials have been battling more than natural elements during the state's four-year war against drought. Greywater (household wastewater diverted to outdoor gardens [see "Greywater," Jan/Feb '90]) is viewed by many as a potential saving grace in drought-plagued areas, but its use has remained illegal in the state. Health officials have maintained that the possible spread of bacteria and virus resulting from *improper* greywater use outweighs the exigencies of drought.

Yet the droughts are so severe in the city of San Luis Obispo that mandatory water rationing was instituted in April 1989. Despite the state's edict, last June the county board of supervisors in San Luis Obispo legalized greywater use. Ron Munds, water-conservation

coordinator for the city, estimates that if 500 homes routed their washing machines into greywater systems, over 4,000,000 gallons of water could be saved yearly.

• Saving Trees, Producing Lumber

Homeowners who pine for fine-grained woods but can't bear the thought of sacrificing trees will take heart in heart pine, Goodwin Lumber style. The small, Florida based company is supplying 200-year old wood to the aesthetically inclined — without cutting down a single tree. Replacing loggers' outfits with wet suits, Goodwin Lumber employees comb Georgia and South Carolina riverbeds, recovering logs of southern long-leaf heart pine that have been perfectly preserved in water.

Because the logs are retrieved by

hand instead of dredged by machinery, river bottoms and the aquatic life they harbor remain undisturbed.

During the 1700s and 1800s, vast tracts of southern land were clear-cut to river banks, and sawmill-bound logs were rafted downstream. Frequently, the heaviest logs would fall off and sink to the bottom. Submerged in water, the soft outer layers of wood eventually deteriorated; but the weighty, dense-hearted wood remained intact. Now, Goodwin Lumber is recovering the sunken logs and milling them manually to give the wood a delicate grain, favored by craftsmen.

Members of a Costa Rican lumber-manufacturers' group recently viewed the Goodwin's tree-saving, wood-recovery process at their Micanopy mill. Because its stands of tropical hardwood are shrinking drastically, the Costan Rican government is exploring ways to reduce logging by 50 percent.

EARTH SWATCH



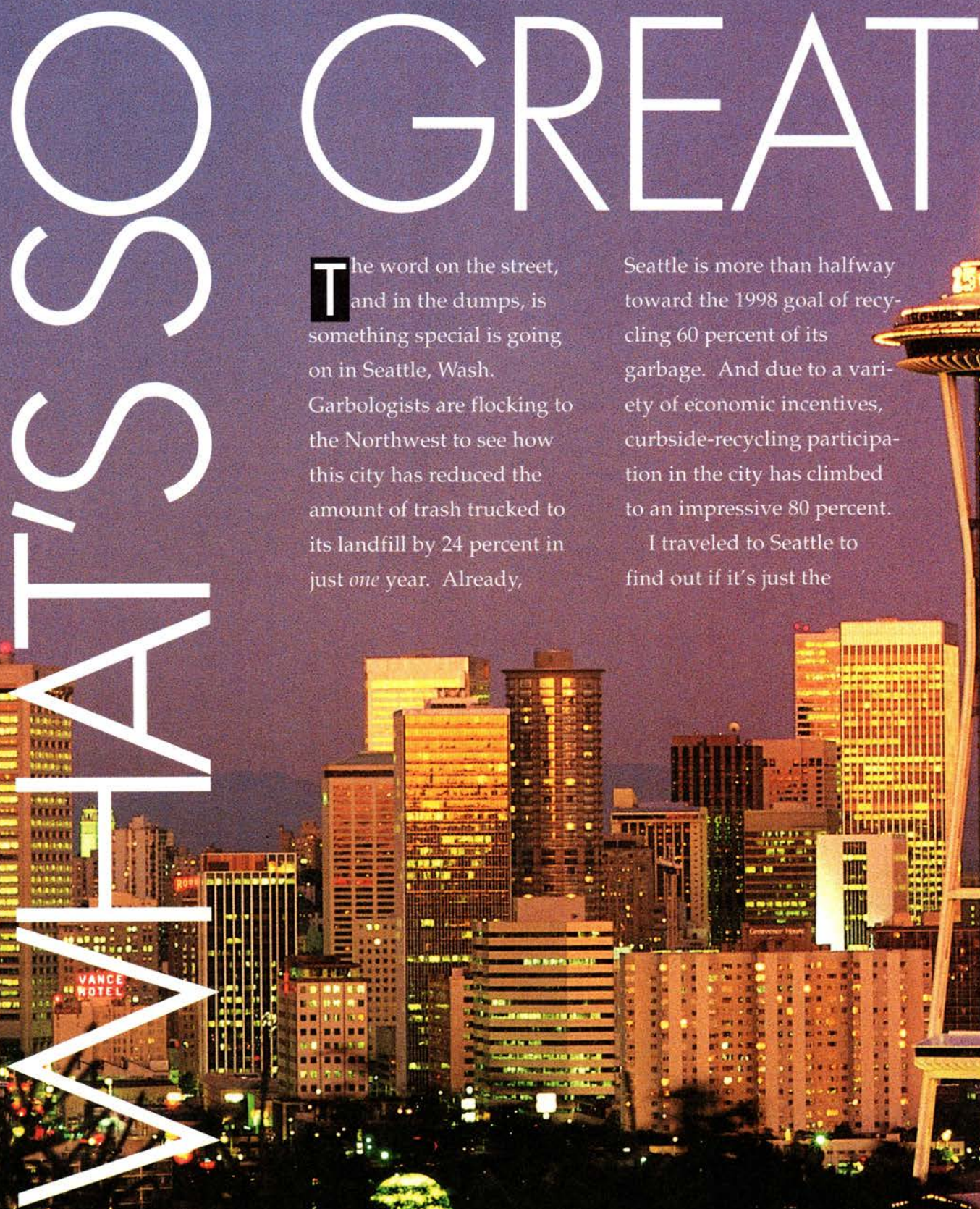
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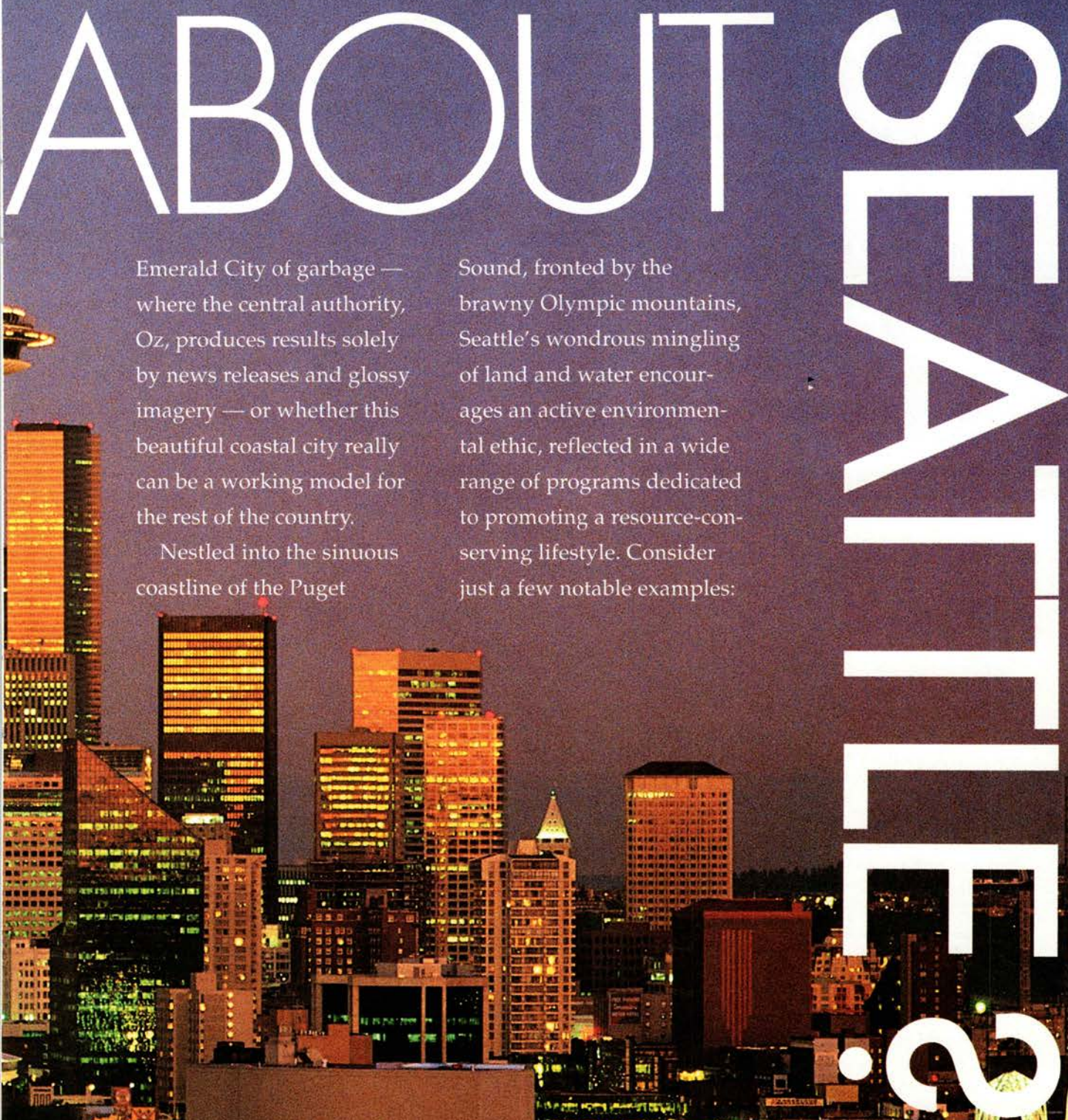
The word on the street, and in the dumps, is something special is going on in Seattle, Wash. Garbologists are flocking to the Northwest to see how this city has reduced the amount of trash trucked to its landfill by 24 percent in just *one* year. Already,

Seattle is more than halfway toward the 1998 goal of recycling 60 percent of its garbage. And due to a variety of economic incentives, curbside-recycling participation in the city has climbed to an impressive 80 percent.

I traveled to Seattle to find out if it's just the

SEATTLE, A CITY THAT'S ON THE CUTTING EDGE OF CUTTING GARBAGE, MAY SHOW THE REST OF US HOW TO REDUCE AND REUSE OUR WASTE.

ABOUT SEATTLE



Emerald City of garbage — where the central authority, Oz, produces results solely by news releases and glossy imagery — or whether this beautiful coastal city really can be a working model for the rest of the country.

Nestled into the sinuous coastline of the Puget

Sound, fronted by the brawny Olympic mountains, Seattle's wondrous mingling of land and water encourages an active environmental ethic, reflected in a wide range of programs dedicated to promoting a resource-conserving lifestyle. Consider just a few notable examples:

BY ROBERT KOURIK



PHOTOS: ROBERT KOURIK

Freeway Park, spanning Seattle's busy Rte. 5, greens the city's deep core. Horticulturist Bob Lily tends the exotic plants that blanket his houseboat.

THE PEA PATCH was launched in 1973, when workers transformed ten rubble-strewn lots into vegetable gardens. Now, this city-wide community garden program has grown to include 24 sites covering 13 acres. Last year, volunteer gardeners donated more than eight tons of fresh produce to Seattle's food bank for free distribution to low-income people.

SEATTLE CITY LIGHT operates a showroom on energy-efficient lighting technologies, called the Lighting Design Lab. It offers free consultations to help homeowners plan healthy levels of lighting while using the least amount of electricity. The design lab, perhaps the only one of its kind in the country, primarily assists commercial projects because half of all electricity used in office buildings goes to lighting.

THE SEATTLE WATER DEPARTMENT offers a water-conservation program that, from year to year, features demonstration sites ranging from drip irrigation to water-efficient gardening to scheduling irrigation times based upon the weekly climate.

SEA-DRU-NAR, a drug- and alcohol-rehabilitation program, collects, separates, and recycles office

paper from 300 businesses in downtown Seattle. The program's recovering addicts focus on separating high-grade white paper, which currently garners \$160 per ton, from mixed paper. Income from the sale of paper waste funds about 60 percent of Sea-Dru-Nar's treatment program.

THE SEATTLE ZOO's composting program yearly converts 540 tons of raw material (animal waste and landscape clippings) into 1,000 cubic yards of high-quality, "designer" compost that's sold as Zoo Doo.

Along with innovative programs and a conservation-minded populace, the greening of Seattle stems from a number of dedicated municipal employees, economic incentives, and two toxic landfills.

The cost of cleaning up the city's Midway and Kent Highlands landfills, closed in 1983 and 1986, respectively, was the big stick that nudged Seattle toward a truly ambitious recycling program. After the Midway landfill closed, studies showed it was venting combustible methane off-site, according to Bruce Jones, director of landfill closure at Seattle's Solid Waste Utility (SWU). At the Kent Highlands landfill, Mr. Jones adds, "leachate [*the chemical soup that oozes from a landfill — eds.*], includ-

ing some very low levels of volatile organic compounds, has been detected in the groundwater below the site." As a result, both of the dumps have been classified as Superfund sites, requiring Seattle to spend about \$80 million in cleanup costs over the next several years. Air and groundwater monitoring will continue for decades.

TO BURN, OR NOT TO BURN

With its two landfills about to close, the city started looking at waste-disposal alternatives. One of the modern, technological fixes that appeared in 1987 feasibility studies was incineration. Large, expensive waste-to-energy plants for burning garbage to make electricity continue to be a controversial solution to trash management. Nevertheless, building a new landfill within the city's limits was out of the question, so an incinerator seemed to be a likely candidate.

Environmental groups like the Washington Toxics Coalition vigorously opposed incineration. Gabriella Uhlar-Heffner, now working on yard waste and tire recycling at SWU, remembers: "Our number one concern was the incinerator's [potential] impact on waste reduction and recycling contracts, because incinerators require guaranteed tonnage [of waste that is often recyclable]. We were also concerned with long-term environmental impacts such as the heavy metals [that are vented] into the air and left in the ash [that remains after burning]."

Soon the Seattle City Council, feeling the heat over the incinerator issue, instructed SWU to take a look at recycling. The agency issued a Recycling Potential Assessment that posed the questions: What would happen if all the capital costs for an incinerator were spent on recycling? And how much waste could be reduced without incineration?

Studies of 21 exemplary urban-recycling programs seemed to indicate it was possible to attain up to 78-percent recycling levels, depending on the mix of programs. This information was matched to various disposal options for the leftovers. It soon became obvious, according to the current director of SWU, Diana Gale, that at the 60-percent level of recycling, the cost of building a smaller incinerator would approximate the cost of landfilling the remaining 40 percent of nonrecyclables. A combination of recycling and landfilling seemed preferable to recycling and burning.

Seattle's Mayor and City Council officially canned the incinerator option in October 1988, inked a contract with Waste Management, Inc., for the use of a long-haul landfill in Gillman County, Oregon, in September 1990, and backed recycling as the long-term solution for Seattle's waste-disposal problems. As a consequence of ruling out incineration, the SWU set the very ambitious goal of 60-percent recycling by 1998.

Because Seattle lacked a way to burn or dump its waste (within city limits), Diana Gale, a former policy analyst with the Seattle City Council, was able to make a deal and become director of the SWU with the provision that ten new positions would be funded. As she tells it, "I brought in people who were different — environmentalists, public-information specialists, economists, and community activists — to make a shift toward a community-based response program." With the help of people who, like Ms. Gale, combined professional expertise with a personal commitment to a conserving, environmentally sound future, the recycling movement has been mainstreamed in Seattle.

WALLET-INDUCED RECYCLING

When Seattle started to make its big push for waste reduction, conflicts arose between new municipal programs and small, private recycling companies

THE GREENING OF SEATTLE STEMS

FROM DEDICATED MUNICIPAL

EMPLOYEES, ECONOMIC INCENTIVES,

AND TWO TOXIC LANDFILLS.

— those early advocates of recycling who were "in the trenches" long before recycling had a rebirth of popularity. Ms. Gale readily admits to problems in this area: "We reached out to the smaller companies to bid on contracts. If some [larger recycling] company got a contract, they were required to mitigate the impact on small companies — buy them out, hire staff from the existing company, or promote the private recycler's efforts." Nevertheless, the transition to stepped-up, city-sponsored recycling forced a number of companies out of business.

Prior to 1988, recycling was encouraged by either the buy-back value for recyclables (paid out at various privately owned drop-off centers), or the personal satisfac-

Volunteer gardeners reclaimed a parking lot and transformed it into this composted garden.



JILL COHEN



COURTESY OF WASTE MANAGEMENT, INC.



ROBERT KOURIK

Curbside pickup of recyclables went citywide in 1988. Households save money by cutting waste and recycling.

tion of adhering to an environmental ethic. Seattle's pay-per-can garbage program, implemented in 1981 and accelerated in 1989, is designed to make people recycle by hitting them where it hurts, in the wallet. Weekly curbside pickup of a 19-gallon can costs \$10.70 per month, a 30-gallon can costs \$13.75, while additional cans are \$9. A household that separates and cuts its waste from two cans to one saves \$9 monthly. Volume-based rates encourage waste reduction by financial motivation.

Such a pricing structure still penalizes households that have greatly reduced the amount of trash they generate, because the

rates are based on the size and number of cans that each household uses, even though a can may be only half-filled with garbage. Clearly, a rate system based on the weight of the can is more equitable. So Seattle, in cooperation with a private waste hauler, is experimenting with a weight-based fee for trash collection. Prototypes of garbage trucks are being developed that would be equipped with scales and a laser to scan customer account numbers (much like a grocery store). The truck would weigh the load and bill the household's account through its own computer.

Curbside pickup of recyclables, which began on a citywide scale in 1988, is handled by two private companies — Recycle America, a division of Waste Management, Inc., covers the north end of town and Recycle Seattle, a division

of Rabanco Companies, works the south side. Each company uses a different approach to curbside collection. The results are strikingly varied.

The Recycle America routes feature brightly colored bins for sorting three different categories of recyclables — cans, glass, and plastic bottles in the yellow bin, newspaper in the dark-green bin, and mixed paper in the lime-green bin. At a central facility, tin is separated magnetically from aluminum, glass is hand-sorted into three different colors, and cardboard is pulled from the mixed paper. Eighty-eight percent of the households in Seattle's north end participate in the weekly pickup.

The Recycle Seattle routes use a single, 90-gallon container for all recyclables. Separation of the unsorted materials is performed manually and mechanically at a



central facility. To "recycle," each household need only wheel out its large green toter once a month. In the south side, 74 percent of the households are participating — 14 percent less than the north side of town.

Ginny Stevenson, an SWU spokeswoman, attributes part of the difference in participation to demographics. "The north end is better educated and probably has more environmental activism, while the south end has more apartments and a lower average income," she says. "Also, the south end only gets picked up once each month, there isn't as much peer-group pressure [to recycle], and some of the ethnic population is non-English speaking. We need to do a lot more education in the south side."

TAMING YARD AND KITCHEN WASTE

Yard and waste constitutes about ten percent by volume of the nation's landfills. Recognizing this, in 1985 SWU awarded a contract for planning and implementing Seattle's Master Composter Program to Tilth, a nonprofit organization of gardeners, composters, and environmentalists who promote and teach the organic cultivation of food.

The first of its kind in the country, the Master Composter Program features a four-pronged approach to educating the public: demonstration sites that show a number of composting methods and technologies; a force of trained, volunteer Master Composters; free literature on various ways to compost; and a compost hotline to answer the public's questions.

Carl Woestendiek is one of those dedicated advocates Ms. Gale brought into the city's fold. He's a waste-reduction planner in charge of Seattle's backyard-composting program, among other projects, and he brings to the job a lot of personal experience, having composted his home's waste for well over a decade. One of his jobs is to oversee the distribu-

tion of free compost bins, in the hope of encouraging backyard composting.

Each bin, made of wooden slats stacked like a log house, is approximately three feet square and 35 inches tall. Mr. Woestendiek projects that a bin can compost yearly about 240 pounds of yard and garden waste. The entire program has set an ambitious goal of distributing 70,000 bins to 46 percent of Seattle's households by 1998. Seattle's backyard-compost program will soon be recycling an impressive 9,600 tons per year of "waste" (that once was landfilled) into valuable soil amendments and mulch.

Some gardeners are concerned that the bin's thin, 1.5-inch-square slats will warp and break in short order. Others find the construction of the bin troublesome. Because the front is sometimes difficult to remove, composters can be discouraged from turning the pile. Also, the open slats allow mice or rats to colonize neglected piles. In response to these concerns, SWU is considering bins made from rot-resistant, recycled plastic.

With the help of focus groups, Mr. Woestendiek has taken a hard look at the program. He's found that "most people felt the educational component is important and the consultation is valuable. Paradoxically, most people say that, if given the choice, they wouldn't want to give up an hour of their time for the compost consultation and demonstration."

The stickiest problem with compostables are the kitchen scraps, which represent more than three percent by volume of the nation's landfills. The bins are not recommended for kitchen waste, due to possible rodent problems. Therefore, worm bins are advised for the digestion of kitchen scraps into worm castings, a valuable fertilizer. Each of the five compost demonstration sites models a bin that's filled with thousands of manure worms, which can easily handle the eight pounds of scraps typically produced by two adults each week. Nowhere have I seen

"WHAT WOULD HAPPEN IF ALL THE CAPITAL COSTS FOR AN INCINERATOR WERE SPENT ON RECYCLING?" POLS ASKED.



ROBERT KOURIK



ROBERT KOURIK

Seattle's demonstration sites feature 12 ways to compost (above), including wormbins for digesting kitchen scraps (top).



HOWARD STENN

Drought-tolerant, organically grown herbs edge the pathway at this demonstration garden.



ROBERT KOURIK



ROBERT KOURIK

The Cedar Grove Compost Company's hammer mill! (left) shreds yearly 260,000 cubic yards of raw yard waste. Collection bins (top) ready office waste for recycling.

more worm bins than in Seattle!

Of course, not everyone wants to compost, even though a 1989 Seattle ordinance makes it illegal to mix yard waste with household trash. The Clean Green yard-waste recycling program offers two other options for the public — curbside pickup or disposal at a transfer station for a discounted dumping fee. Private haulers collect the bagged or banded waste two to four times monthly (for an extra two dollars per month), and transport it to a garbage-to-compost facility. Otherwise, each household can take its yard waste to a local transfer station, where it can be dumped in a separate area at less cost than regular solid waste. In 1989, the program's first year, over 43,000 tons of yard waste were collected, 60 percent above Clean Green's initial goal.

MOUNTAINS OF COMPOST

All yard waste that isn't home-composted ends up at the Cedar Grove Compost Company, owned and operated by Rabanco Companies, a centralized composting operation some 30 miles southeast of Seattle. As with recycling, SWU works as a liaison between the public and a private waste-disposal facility.

Gabriella Uhlar-Heffner, once a participant in Washington Toxics Coalition's fight against Seattle's proposed incinerator, is now SWU's yard-waste program coordinator. She's in frequent communication with Jan Allen, general manager of the 26-acre Cedar Grove Compost Company site. Mr. Allen is a busy guy who appears more excited than harried by the huge task at hand — processing Seattle's green waste into 50,000 cubic yards of rich, black compost.

The full impact of composting on a city-wide scale is staggering. Cedar Grove's 50,000 cubic yard pile of compost, generated during its first year of operation, is enormous. The bulldozer working the four-storey mountain of compost

appears no larger than a toy. I was struck by the amount of garbage which can accumulate when a family abdicates responsibility for even a tiny amount of yard waste by casually tossing it out for curbside collection.

Equally impressive is the towering pile of fresh landscape trimmings. A lone worker is charged with picking through the pile to open plastic bags and pull out any noncompostable contraband. Because the fee for collecting yard waste is much smaller than solid waste, some anti-environmental citizens stash metals, plastics, and other contaminants inside a bag of lawn clippings in order to save a few bucks on their dumping fee.

Despite the seemingly large amount of plastic contamination, Ms. Uhlar-Heffner points out that contaminants are less than one percent of the total amount of collected compost. "But we want to help educate the public about the importance of setting out only compostable material, [so] we're downplaying the phrase 'yard waste' and focusing on Clean Green as the name of our program," she says. In response to Rabanco's difficulties with sorting the plastic-bag residue, SWU plans to emphasize the use of containers, and test some versions of biodegradable paper bags for homeowners to use for excess yard waste.

The finished compost is some of the darkest-colored, best-looking I've seen. According to Mr. Allen, who watches over the operation with an almost parental attentiveness, "the topsoil manufacturers are grabbing the material as fast as we can screen it, at a wholesale cost of \$6 per cubic yard." During last July and August, nearly 5,000 cubic yards of screened compost were sold. Rabanco expects the yearly volume of production to range from 50,000 to 70,000 cubic yards.

Together, Ms. Uhlar-Heffner and Mr. Allen are identifying potential markets, sampling and testing the yard waste compost, and establishing programs to educate the public about the importance of separating contaminants from Clean Green waste.

SEATTLE COLLECTED 260,000

CU.YDS. OF DUMPED HOUSEHOLD

LANDSCAPE WASTE, AND PRO-


CESSED IT INTO RICH COMPOST.

THE FUTURE OF SEATTLE'S BATTLE OF THE WASTELINE

The greening of Seattle is far from being the Land-of-Oz of recycling and environmentalism, where good "green" news is conjured with smoke and mirrors. Sure, Seattle's mission to reduce and reuse its waste has had its share of false starts. Yet SWU officials, environmentalists, and private waste haulers are forthright about what does and doesn't work. This refreshing honesty comes about, in part, because almost everyone sees Seattle as a city that's on the cutting edge of cutting garbage. Insiders want to share their success, and failures, with the rest of us.

The nation has a big appetite for what Seattle has learned. Vincent Nykiel, recycling manager for Chemung County, N.Y., traveled to Seattle and met with SWU officials last year. "At that time, Seattle was ahead of the other ten states we visited," recalls Mr. Nykiel. "We learned a hell of a lot from Seattle's unique mixture of public and private programs." When he visited Seattle in June 1989, Michael Mee, the solid-waste administrator for Newport News, Virginia, discovered that "while commingled recycling is capital intensive, it is doable — Seattle has a fantastic program."

As with any modern city, unforeseen events can alter Seattle's direction. For the present, Seattle offers countless examples of how cities can manage their battle-of-the-wasteline, and stay on a successful diet.

As Diane Gale puts it: "With a little bit of extra effort, recycling is manageable." 

APARTMENT

If recycling is going to work, it's got to go beyond the single-family house. Here, a field report on how pioneer projects have tackled tenant cooperation and quality control.

Mattresses, tires, and even a cast-off air conditioner clog the 90-gallon recycling bins outside a St. Paul, Minn., apartment mid-rise. The recycling program for this building fizzled out because the single-family neighbors have found the containers a handy dumping ground.

At a low-income apartment complex in Prince George's County, Md., recycling can't compete with priorities like paying the rent and combating the drug scene. Youngsters taking out the garbage can't reach the too-high dumpsters, so they drop it into recycling bins instead — making the recyclables unmarketable.

It's the rubbish world's newest challenge: apartment recycling. This cumbersome business so far has more failures than successes, because every problem of recycling is intensified by the larger scale: separating garbage in a crowded kitchen, finding a safe place for storage, labor-intensive collection, and securing a market for the recyclables. The biggest problem is quality control. "You set out separate containers for newspaper, aluminum, glass, and plastics, and all the residents see are bins for garbage, garbage, garbage," moans Joseph Miranda, recycling coordinator for Saratoga County, N. Y., where recycling was mandated last June.

In high-rise apartments, it's not only fire codes that must be considered when stacking huge quantities of newspaper. Whether recyclables are stored in basements, laundry rooms, or chute alcoves, they attract rats, mice, and roaches unless glass bottles and metal cans are scrupulously clean.

BY ANNE MAGNUSON



RECYCLING

The next problem is lining up markets. Even with cooperation and an ambitious program involving multiple buildings, recycling doesn't make money and in many cases doesn't even pay for itself yet. So why consider recycling at urban apartments and condominiums?

For one thing, mandatory recycling goals in cities and states cannot be met without jumping this hurdle. Further, as with any recycling effort, the eventual goal is to avoid the growing costs of landfilling and burning.

A recycling program can rarely be set up for an individual building. True, really dedicated tenants can band together and bring pressure on the building manager and City Hall while working to line up markets and haulers. But in the three programs **GARBAGE** reviewed, the impetus did not come from tenants or building managers. The reason? Few haulers and buyers of recyclables seek or accept materials from two or even ten apartment complexes. They need high volume to make it pay for them. So local government launches

most recycling projects, involving apartment management from the outside in. Apparently, there are no guidelines yet. Every city and town that's had the nerve to try has developed a different routine.

Making It Work

In apartment projects involving hundreds of people, residents and managers need to be told what's in it for them, as well as how to sort their trash. The St. Paul Neighborhood Energy Consortium, a non-profit agency that's under contract to manage the city's recycling effort, provides information flyers annually to every apartment household included in the recycling project. Feedback is used, too — residents get a monthly summary of pounds recycled. And at year's end, a thank-you poster tallies the figures and translates the total into the trees, water, and energy saved.

Education is the first step to compliance, but it's not

enough. Recycling has to be convenient for the residents. A striking comparison of two sites in St. Paul illustrates the point. At one complex, eight containers were strategically placed outdoors. At another building with an identical layout, the manager would allow only one recycling site — but behind the garages. Result? The first apartment court recycles 45 pounds per unit per month; the second, 14 pounds per unit per month.

Recycling has to be convenient for the hauler, too. Community pilot programs regularly encounter troubles that result from designing a program from the outside, instead of involving the building manager and the contrac-



ILLUSTRATIONS BY KEITH BENDIS

"You set out separate containers for recyclables, and all the residents see are bins for garbage, garbage, garbage."

tor from the start. For example, at one trial apartment building in Prince George's County, the carters were to enter the basement with empty containers, pick up the containers full of separated recyclables, and place them on their trucks. In practice, it proved easier for the hauler to lug an empty plastic barrel to the basement, commingle the materials in the one enormous barrel, carry it up on his back, and re-separate the goods truckside. "It doesn't work to sit behind a desk figuring how it's going to go without involving the contractors," says Jennifer Hyde, apartment-house recycling coordinator for Prince George's County.

Quality control — keeping the recy-

clables separated and clean — is usually the biggest job in a recycling project. To deal with contamination, the St. Paul consortium monitors the hauler's reports for each complex, and alerts the property manager if a mixed load occurs. In Prince George's County, recycling planners periodically go on rounds with the collection staff to uncover ongoing problems. To mandate cooperation, some cities are considering adding recycling obligations to tenants' lease agreements.

Jennifer Hyde suggests on-site monitoring to improve separation. Prince George's County (now recycling glass bottles, aluminum cans, and newspapers from 4,000 apartment units) in-

tends to overcome the source-separation problem in mid 1991, when the county opens a materials-recovery facility: They'll collect unsorted recyclables and separate them at the facility.

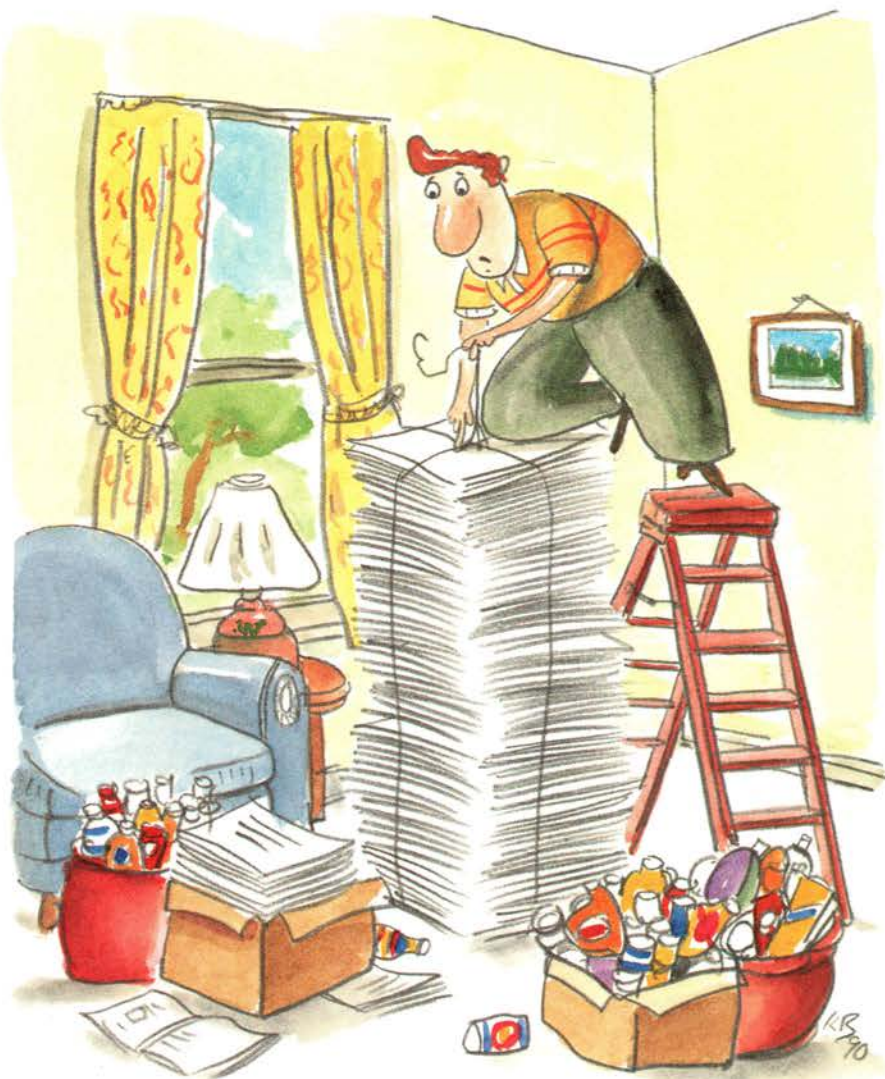
Commingling may, in the future, be the answer. That's the solution New York City is exploring. In its size and complexity, with close to 2.2 million apartment units in multi-family buildings, New York is the recycling planner's nightmare.

Sanitation Police State

Compliance in apartment recycling often results from offering continued, personalized service to each housing complex. Most localities realize this, and so does New York. But the city's dire economic condition, resulting in severe budget constraints in most municipal agencies, makes ongoing contact between the sanitation department and building managers unrealistic. So the current New York recycling effort in 338,122 individual apartment units is accomplished in a more detached, mind-over-matter way. It wasn't always so: Funded by the NYC Department of Sanitation, the Environmental Action Coalition ran a hands-on program from November 1984 through June 1990. What began as a newspaper collection effort in 70 apartment buildings resulted in a highly successful, multi-material recycling project in 217 buildings. More than 19,000 units were recycling a combination of glass, some plastics, aluminum, tin, magazines, phone books, and corrugated cardboard.

The EAC pilot project exceeded its contract goals both for the tons of material collected and for the number of apartments participating. The project was successful in large part because it addressed each apartment complex individually, identifying the best storage areas, wooing the management to provide building staff for collection, and lining up haulers.

Building managers liked recycling under the EAC program. For one thing, the absence of newspapers reduced garbage compactor down-time. For another, tenants didn't have a storage



problem in their kitchens: "They could put out their recyclables daily, hourly, if they wanted," says Tim Forker, the EAC's solid-waste director.

Despite the EAC's successful effort, the Department of Sanitation discontinued the program. With mandatory recycling in place since 1989, apartment-house recycling in New York has gone big time, making the highly involved EAC approach difficult to implement. "The EAC people were the forerunners of recycling in this city," claims Pat Grayson, project manager for NYC's Containerized Apartment House Recycling Program. "It's unfortunate that every municipality can't run [a program] the way they did."

Pat Grayson says the city rarely deals personally with the 6,000 buildings now served. The sanitation department provides wheeled, steel containers six feet long and four feet high. Building caretakers push them curbside if the haulers' mechanized trucks can't pick them up where stored.

The rest is up to the building manager. A sanitation official meets with the manager and a tenant representative one time only — to discuss the logistics of container placement. The DOS provides the building with posters and flyers, telling residents where to drop off recyclables. From the tenant's perspective, recycling under the city-run program isn't all that different from the EAC project. Depending on the size of the maintenance staff in a building, recyclables are either picked up floor by floor by staff or dropped off in a central location (like a laundry room or basement) by tenants themselves.

The city-run program has yet to meet its tonnage goals, in part because projections are based on 100-percent compliance, which Pat Grayson believes is impossible to attain. However, she admits that the system would be a great deal more successful if consistent, individual attention could be provided to each building. "If a [recycling-container] wheel is broken," she says, "it could take [the sanitation department] two months to get around to repairing it. And that could set recycling back."



New York City's program diverges from almost all others because the recyclables are commingled, not separated at the source (that is, before pickup). Tenants need only separate newspapers from other recyclables (and both from regular garbage). They dump their loose newspapers and magazines in white steel containers; all their metal cans, glass bottles of all colors, and (in some cases) unsorted plastics go in blue containers. New York is betting on a commingled system because it's more convenient for apartment dwellers. It's less expensive to collect commingled material, but more costly to process it later. Now, most unsorted recyclables are hauled to an intermediate processing center for separation.

New York's recycling enforcement law has sharp teeth. Fines are levied for any of 17 different violations of the recycling code. Transgressions include mixing trash with recyclables, and tossing dirty cans or bottles into recycling bins. An apartment manager curbing 20 bags a week could be slapped with a \$500 fine per bag.

Getting Help


Terry Grogan, chief of the Solid Waste Recycling Section at the federal Environmental Protection Agency, recommends two apartment recycling guides: New Jersey's "Strength in Numbers," a videotape, and a Rhode Island instructional pamphlet.

The New Jersey video gets to the nitty-gritty by explaining, for example, how monthly generation rates are estimated. Depending on the size of

your storage space, the rates enable you to determine pickup frequency. "Strength in Numbers," a 10-minute VHS tape, is available for \$17 ppd. from the Association of New Jersey Environmental Commissions, Box 157, Mendham, NJ 07945.

The "Guide for Preparing Solid Waste Reduction and Recycling Plans for Multi-family Residential Units" assists building managers in complying with recycling laws. Order it free of charge from OSCAR, the Rhode Island Department of Environmental Management, 83 Park St., Providence, RI 02903-1037.

The EPA funds the Peer Match Program, paying 50 percent of the travel expenses for tried-and-true experts to advise uninitiated towns. Peer Match assists on nearly all solid-waste issues, including rural recycling, market development, and education. Contact The National Recycling Coalition, 1101 30th Street NW, Suite 305, Washington, DC 20007.

Most states, counties, and even cities overlook apartment recycling because it's easier to get single-family houses to comply with recycling laws. According to Terry Grogan, recycling chief at the EPA, "apartment recycling is tough ... the jury is still out." He told us he can't identify a single large-scale program that spells out definitively "this is how it should be done." 

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THE URBAN GARDEN



GROWING VEGETABLES IN POTS AND TINY PLOTS IN CROWDED CITIES IS AN IDEA THAT DATES BACK AT LEAST TO AN URBAN ROME THE ANCIENTS KNEW. MORE RECENTLY, THE DESIRE FOR ORGANICALLY GROWN, PESTICIDE-FREE PRODUCE HAS CREATED A NEW KIND OF CITY GARDEN WHERE FOOD PLANTS ARE MIXED WITH FLOWERS TO MAKE THE MOST OF A SMALL SPACE.

What can you grow in a city garden? Even if you've only got room for pots and a few window boxes, your harvest might include carrots, lettuces, onions, radishes, strawberries, tomatos, and herbs. A terrace or a balcony can be a home to a potted apricot tree; a sunny backyard 20 feet by 20 feet can support perhaps a half dozen fruit trees (the dwarf kind) with enough space left over for raised beds to grow corn, potatos, cabbages, and beans.

Linda Yang, a gardening columnist for the *New York Times*, once grew blueberries on the 19th floor of a Manhattan apartment building. "My kids used to harvest pints of blueberries, far more than I could make muffins and pancakes with," she says.

Today, Ms. Yang's garden is behind a townhouse not far from Sutton Place, where she grows herbs, vegetables, and

many flowers in a space that includes a linden grove, a water garden, and a tiny English border. "People are taking a much stronger view of the architectural elements in the garden," she says. Latticework, trellises, tiny gazebos, and small fountains have become more popular now that these objects are available through mail-order catalogs.

Getting Started: Ornamentals First

The reason why many city gardeners give up in frustration is that they start with the hard work of digging and planting without first planning for the trellises, furniture, and ornamentals which will make your backyard a garden. You see, a garden is more than a place for vegetables. So-called "ornamental" design elements are vital in creating a microclimate suitable for growing food



J.P. GODEAUT

BY MIA AMATO



Mounds of lavender marguerites border the painted wooden trelliswork that encloses this Parisian rooftop.

plants. Pam Peirce, a founding member of the San Francisco League of Urban Gardeners (SLUG), notes fences used to block eyesore views can also be a windscreen.

"Standard board fence is less desirable than a lath or lattice fence, which lets in air and light but keeps wind down," says Ms. Peirce, who doubles as a gardening author. A foot of decorative latticework added to a plain board fence acts as a wind baffle, she adds. A lattice trellis will extend the growing area upwards for vining crops such as cucumbers, string beans, and kiwi fruit.

Linda Yang suggests hedges in containers as a wind-break. "Good choices would be privet, firethorn, forsythia, rugosa roses, or yew, which tolerates deep shade. These plants also tolerate high winds and the resulting rapid dehydration." Plants that can weather extreme sunlight and strong winds are good for a high terrace or a rooftop. Sturdy choices include culinary rosemary, beach plum, "and all-

grey leaved plants, such as lavender, sage, and artemesias," adds Ms. Yang.

A good way to start a city garden is to begin with an ornamental foundation that incorporates planters, trees, and shrubs. A weathered bench or a bistro set — a small metal table with chairs — can immediately define your outdoor space as a garden. Lightweight, cast-aluminum versions of old-fashioned, wrought-iron garden furniture are available in mail-order catalogs.

An arbor (for a future grapevine) or a small, potted fruit tree provides dappled shade to protect tender vegetable plants from a too-strong sun. Ms. Yang admires the pendulous branches of weeping cherry, weeping spruce, and siberian pea trees. Because they grow down instead of up, they're perfect for balconies that have



A stucco-covered planter fits against a stair (left), while circular planters meld with curved steps (right).



keep seedlings warm in early spring, and protect them from insects and strong winds.

There's not much you can do about a too-shady garden. Tomatoes need a minimum of six hours of direct sunlight; most vegetables and fruit trees also need that much. Shadier gardens can accommodate leafy greens, like lettuces and swiss chard, members of the onion family, and many herbs. Mints for tea, jelly, and mint juleps thrive in dim, damp places.

Water, Everywhere

Pam Peirce feels the most important factor in choosing a site is accessibility to water. "If you have to carry water up to the roof in buckets, you're not going to make it," she warns. Of course, you can snake a hose from an indoor faucet through a window to your terrace garden. Rooftops and balconies pose problems with drainage and leaks; professional landscapers plan drainage routes and often line a rooftop garden with layers of heavy plastic sheeting. This might be topped with plank decking, which helps distribute the weight of planter boxes so the roof doesn't cave in.

Backyard gardens need watering at least once a week if it doesn't rain regularly. Plants in containers usually have to be watered thoroughly *every day* in the summer, until excess water runs out the drainage holes. Don't try to cheat by using pots without holes, because the resulting root rots will kill the plants. Beginners should start small until they get the hang of hand watering.

Drip irrigation systems and automated

another balcony overhead. Ms. Peirce recommends awnings of agricultural shade cloth, available in varying degrees of transparency, to keep plants cool. She uses water- and air-permeable floating row covers to

end up in the ground. Contaminated soil is a concern of many gardeners, but it's one that is often unfounded.

"Lead in the soil is usually not a problem unless your garden is right by the highway," explains Charlie Mazza of the Cornell Cooperative Extension. Mr. Mazza says that gardens shielded from busy streets by buildings are usually safe from automotive lead emissions.

"Cornell spends a great deal of time researching the physical factors in soil that create a lead problem," says Mr. Mazza. "It found that if the soil is rich in organic matter and has a balanced pH of about 6.5 to 7.0, lead in the soil will not be taken up by the roots of plants."

The pH of a soil, its measure of acidity or sweetness ("you can taste the difference, if you're so inclined," Mr. Mazza says), determines how easily nitrogen, phosphorus, potassium, and trace minerals can be absorbed from

timers can make watering more efficient. Water departments in cities that have weathered recent droughts may actually require drip systems on all new landscaping. Greywater (leftover water from sinks, bathtubs, and washing machines) can be used to irrigate most ornamentals and some food plants, but an elaborate greywater setup may be illegal in some cities. [For more on this, see "Greywater for Your Garden," Jan/Feb '90 — editors.]

Toxins In Your Soil?

Residues that yellow the air above Los Angeles' freeways eventually

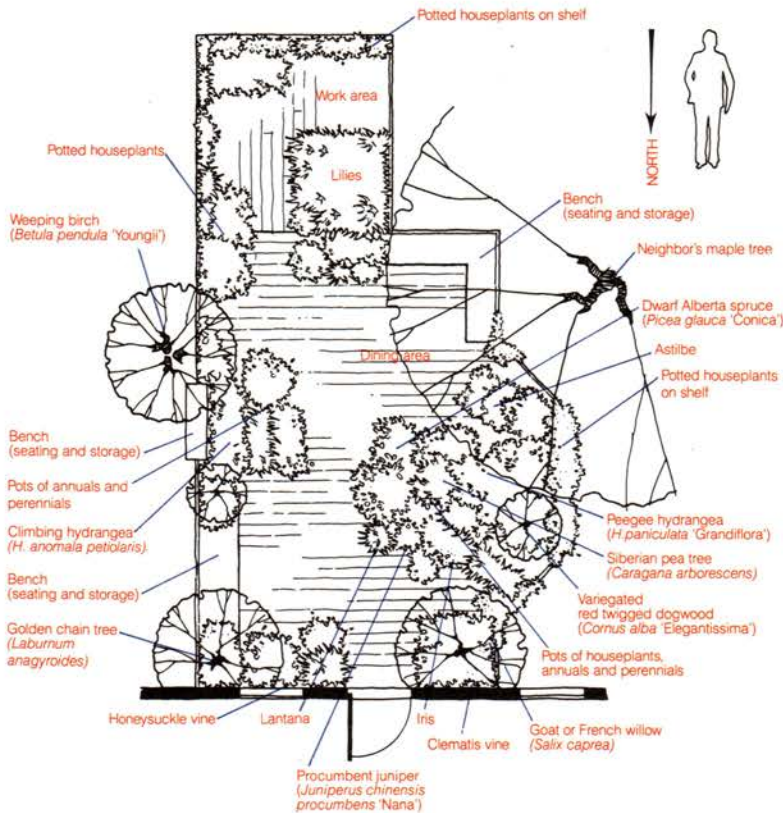


ILLUSTRATION BY SHARON BRADLEY PAPP; ALL PHOTOS, EXCEPT WHERE INDICATED, REPRINTED W/ PERMISSION FROM "THE CITY GARDENER'S HANDBOOK: FROM BALCONY TO BACKYARD," RANDOM HOUSE © LINDA YANG 1990

the soil into the plants. A pH of 6.0 to 6.8 is the ideal range. A pH under 5.5 or over 7.2 means that some (but not all) nutrients can be absorbed.

"No matter how much fertilizer you give the plant, it will be unable to take the nutrients into its roots if the pH is off," Mr. Mazza explains. Soil pH can be adjusted by adding a small amount of ground limestone to raise the reading, or adding powdered sulfur to lower it.

A pH test is easy with a probe called a pH meter, or with litmus tests available at a garden center. The nearest extension office or local garden club can recommend the name of a reliable soil testing service if you suspect benzene, radon, or other contaminants.

While container gardeners can start with clean, sandy loam purchased at a garden center, backyard dirt can be brought back to life by adding lots of organic material, such as dried manures, peat moss, shredded bark, or compost. Even balcony gardeners can make compost at home [see section on compost, below].

Adjusting the pH and replenishing containers and backyards once a year with an organic compost rich in microorganisms is usually enough to maintain healthy soil. Airborne pollutants tend to be a greater problem at street level because automobile emissions contain heavy metals that do not rise to the higher floors of apartment buildings. For years, Cornell Extension has been advising city gardeners to wash their vegetables with a one percent vinegar solution in water to dissolve airborne particles. Research also shows sulfur dioxide and heavy metal

nursery or garden center) than with seeds.

Herbs are the easiest of all, because they are readily found as started plants. All you do is dig a hole in your planter box about the same size as the plant's container, and cover the bottom of the hole with loose soil. Remove the herb from its container, loosen lightly the root ball, and pat it gently into the hole, making sure the crown (the point where the roots meet the stem) is



Containers bearing crabapple trees and annual bloomers create a serpentine path, transforming this rooftop terrace.

"Lead in the soil is usually not a problem, unless your garden is near a highway." Charlie Mazza, Cornell Cooperative Extension

residues are less of a problem in fruiting vegetables, such as tomatoes and cucumbers, where the leaves are not eaten, than in greens whose leaves are eaten.

Linda Yang suggests keeping plants healthy by hosing them periodically to clean off dust and grime, taking care to wash the undersides of the leaves.

Vegetables 101

Whether you are working with containers or raised beds, Mr. Mazza suggests beginning gardeners start with easy crops such as radishes and greens. These are ready to eat less than a month after planting. A window box six inches deep easily accommodates shallow-rooted spinach and lettuce. For your first try, it may be easier to begin with seedlings (started plants, usually found in six-packs at a

level with the soil surface. Then water it well with a liquid fertilizer (such as diluted fish emulsion). Easy herbs include basil, thyme, oregano, sage, rosemary, and chives.

Of course, lots of folks want to start big time — with tomatoes. "The biggest mistake [with tomatoes] is using too small a container," says Pam Peirce. "There are small varieties of tomato, like Patio and Tiny Tim, that will live in a pot six inches deep, but your standard tomato, which includes most tall, vining cherry tomatoes, needs a container that's at least a foot-and-a-half to two feet deep."

The University of California Cooperative Extension suggests selecting seedling varieties marked VF, which indicates resistance to common tomato diseases. Those to try include Yellow Pear, which bears bright yellow, plum-shaped fruits an inch or two long, and Early Girl, a

consistent performer across the U.S. Plant a tomato seedling up to its "neck" — with just the top whorl of leaves sticking out of the soil — and the plant will develop extra feeder roots all along the buried stem.

Standard tomatoes should be gently tied to a six-foot stake pushed into the soil at planting time. Since tomatoes are heat-loving plants, the seedlings will get a better start if you cover them with a mini-greenhouse made from a

doesn't generate enough heat to decompose the organic matter," he explains. "A worm box differs from traditional composting in that the critter that does the job of breaking down the organic material is not a soil organism but a redworm, one that's closely related to the earthworm. The box can be as small as a dishpan, which I've used, or as big as an outdoor sitting bench for two."

Composting with worms doesn't require soil. This very

"If a plant has serious whitefly, it may be best just to throw it away, I mean far away." Pam Peirce, gardening author

plastic gallon milk jug with the top off and the bottom cut out. Once they outgrow the milk jugs, fertilize as you would house plants — about once a month.

Composting: City Style

Real gardeners, even city gardeners, compost. Ms. Yang started with a half-barrel open container and has graduated to a slotted, plastic compost bin in a far corner of her backyard. Her technique isn't fancy — no turning, no bioactivators added — and she mixes only yard clippings, dried leaves, and an occasional bucket of fresh horse manure.

A new, plastic composter for city use, called the Green Cone, is a Canadian invention that's getting good reviews so far. The \$100 unit consists of a mesh basket that is buried in the ground, topped by a 30-inch plastic cone that retains heat, maintaining the activity of composting microorganisms well into the dead of winter. Because the cone is airtight and odorless, all kinds of kitchen scraps, including bones, grease, and meat bits, can be thrown in along with garden waste. Most of the garbage simply disappears in the earth, leaving behind a small pile of usable humus.

If you don't have a backyard and still want to recycle your garden waste into compost, Cornell's Charlie Mazza suggests trying a worm box. "A compost pile needs a minimum of four square feet of space; anything smaller just

simple system requires only the box (with air holes covered by a screen so insects don't get in), bedding for the worms (dampened strips of black-and-white newspaper, peat moss, or dead leaves), worms, and garbage (shredded garden clippings, coffee grounds, vegetable rinds and peels; no meat scraps or grease).

A 2-foot-by-2-foot-by-8-inch box can recycle as much as four pounds of vegetable kitchen waste a week, producing dark, rich humus for the garden in about four months. The box can be started indoors and makes a great science project for kids. A free pamphlet on the subject, "Recycle Your Garbage With Worms," and another for teachers called "Worms in the Classroom," can be ordered through Cornell Cooperative Extension, 15 E. 26th Street, New York, NY 10010. Both include mail-order sources for redworms. [For more on worm bins and other composting methods, see "Garbage to Compost," Nov/Dec '89 — editors.]

Dealing With Theft and Vandalism

Two years ago, Brooklyn gardener Patti Hagan began noticing that drug addicts on her block were picking all the roses and flowerbox flowers, peddling them on street corners for the three or four dollars needed to buy a dose of crack. A reporter for the *Wall Street Journal*, she wrote an article on the rise in urns and potted plants swiped off

RESOURCES FOR CITY GARDENERS

Books

Worms Eat My Garbage

by Mary Appelhof. 110 pages. Flower Press, 10332 Shaver Rd., Kalamazoo, MI 49002. Softcover, \$8.95 ppd. Offers more info on worm bins.

Gardening By Mail

by Barbara Barton. 390 pages. Tusker Press, Sebastapol, CA. Order from: Capability's Books, 2379 Highway 46, Deer Park, WI 54007; (800) 247-8154. Softcover, \$18.95 ppd., specify mail or UPS. One-stop shopping for the mail-order gardener.

The City Gardener's Handbook

by Linda Yang. 316 pages. Random House, Inc., 400 Hahn Rd., Westminster, MD 21157; (800) 733-3000. Hardcover, \$28.95 ppd. Concentrates on the design of small city gardens, an aspect most beginning gardeners ignore.

Golden Gate Gardening

by Pam Peirce. 288 pages. To be published March 1. Heyday Books, P.O. Box 9145, Berkeley, CA 94709; (415) 549-3564. Softcover, \$17.95 ppd. A reference for California gardeners, its material on organic pest management will be useful for everyone.

Recycle Your

Garbage With Worms

Factsheet from Cornell Cooperative Extension, 15 East 26 St., Fifth floor, New York, NY, 10010. Free.

The Extension also publishes *The Gotham Gardener*, a bi-monthly newsletter for gardeners in the New York City area. Also free.

Mail-Order Catalogs

Gardener's Eden

P.O. Box 7307
San Francisco, CA 94120
(415) 421-4242
(Best for ornamentals)

The Natural

Gardening Company

217 San Anselmo Ave.
San Anselmo, CA 94960
(415) 456-5060
(Lists unusual, exotic plants)

The Drip Irrigation Catalog

2833 Vicente St.
San Francisco, CA 94116
(415) 661-2204;
(800) 666-DRIP
(Features drip irrigation systems)

Arbor & Espalier

201 Buena Vista Ave. East
San Francisco, CA 94117
(415) 626-8880
(Best for fruit-tree listings)

window sills. The story suggests that city dwellers plant "defensive" varieties, heavy on spines and thorns. Food plants listed include blackberries and *rosa eglanteria*, whose rose hips can be used to make teas and jams. Ms. Hagan says later investigations suggested that most of the publicized thefts of large trees and rare shrubs were all "inside jobs," perpetrated by employees of landscape firms that installed the plants (and who knew which plants were valuable and where they could be safely resold). She notes that casual thieves tend to zero in on ripened vegetables and common flowers, and often will dig up entire rosebushes and then attempt to sell them back to the owners.

Linda Yang knows a woman who wrapped barbed wire around her rosebushes to discourage theft. "I haven't gone that far yet," she sighs. "What I have done is take the thorny, pruned cuttings from my rose bushes and poked them in the underplantings around my street trees. It seems to discourage dogs, at least. I really cried on the day I had to chain my potted rosebush to the front stoop."

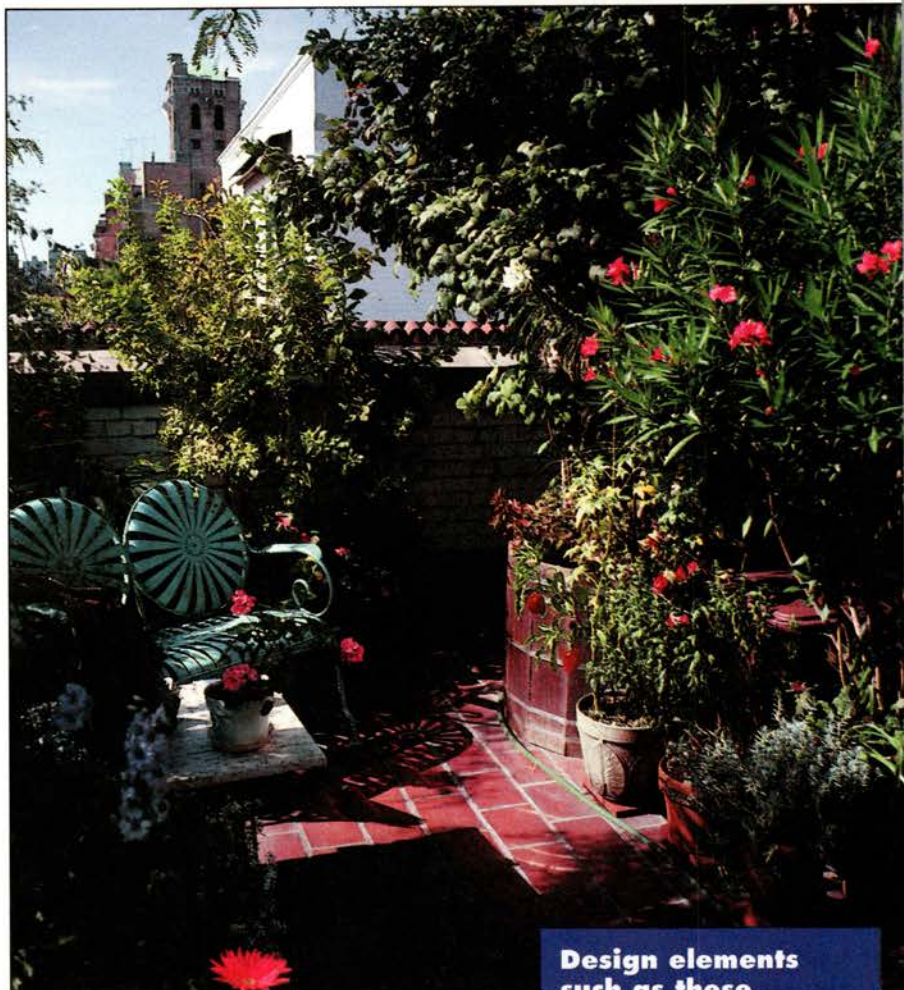
Humane Pest Control

Insect pests can be divided into two categories: things that chew and things that suck. Caterpillars that devour leaves, such as green loopers and the fierce-looking tomato hornworm, can be hand-picked off plants. Sticky traps will keep down populations of Japanese beetle and whitefly. You can make your own traps by hanging white or painted yellow cardboard (Rustoleum #5 Yellow works nicely) coated with a non-toxic sticky product called Tanglefoot (available in most garden centers). Pam Peirce knows people who use a vacuum cleaner to vacuum whitefly off the leaves of their plants.

"If a plant has serious whitefly, it may be best just to throw it away," she points out. "I mean far away, not in your compost pile." She also advises getting rid of plants heavily infested with spider mite, so the problem doesn't spread to other plants. Her rule for aphids is to wash them off with a forceful spray of water.

Another of Ms. Peirce's strategies is to use an "insect bath" to attract beneficial insects such as honeybees and hunter wasps, which attack caterpillars. "You take a bird bath or the saucer for a terra-cotta pot and cover the bottom with small rocks, then fill it with water so that part of the rocks are above the surface," she explains. "Insects will sit on the rocks and drink." Some urban pests seem to leave gardens alone. Cockroaches, notes Charlie Mazza, aren't much of a problem since they prefer to be indoors, where the groceries are. "With rats, it's more a fear of them rather than a case of actual damage," he says. "They're probably just passing through, on their way to the next sewer."

Pam Peirce notes that pigeons and other birds are sometimes attracted to newly seeded beds. Her solution is to poke small, brushy twigs, up to eight inches high, into the beds. "The birds won't work very hard to get in among the sticks because they can't escape easily; I think they're afraid their wings will get caught," she surmises. Linda



Design elements such as these weathered, metal chairs and small table help define this rooftop garden.

Yang suggests using bird netting to cover fruiting trees.

Different strategies can be tried to discourage house cats from digging into freshly turned soil. A nursery owner in San Francisco stapled chicken wire flush to the top of newly seeded raised beds, letting lettuces and leafy greens grow up between the mesh. Ms. Peirce says some people report success by sprinkling cayenne pepper on the soil. She's found that her own cats won't disturb areas that have been sprinkled with fresh grass clippings. Commercial repellents sometimes work for dogs, but not as well as a sturdy fence.

Get Ready, Get Set ... Grow

New gardeners will find that late autumn is a good time to do a soil test. You'll get the results back in plenty of time to plan for soil amendments if they are needed. It's also a good time to send away for plant catalogs and check your local library for gardening books and magazines.

In warmer parts of the country, November and even December is not too late to plant tulips in the backyard, in planters, or in window boxes and around street trees. They can then be dug up when the foliage has browned, and discarded or stored indoors until next autumn.

Mia Amato is a freelance writer who gardens and writes about gardens on both the east and west coasts.

TOMORROW'S OFFICE BUILDING TODAY

Built during the 1950s through the early 1970s, the typical glass and steel towers that corporate America calls home remain bastions of waste and inefficiency. Commercial heat, ventilating, and air-conditioning systems as well as lighting and other electrical needs account for 30 percent of America's peak power consumption. To compensate for the extra heat created by lights and office equipment, most older office buildings guzzle energy by running air conditioners throughout the year. The Sears Tower in Chicago, the world's tallest building, has the AC going even when outdoor temperatures are below zero.

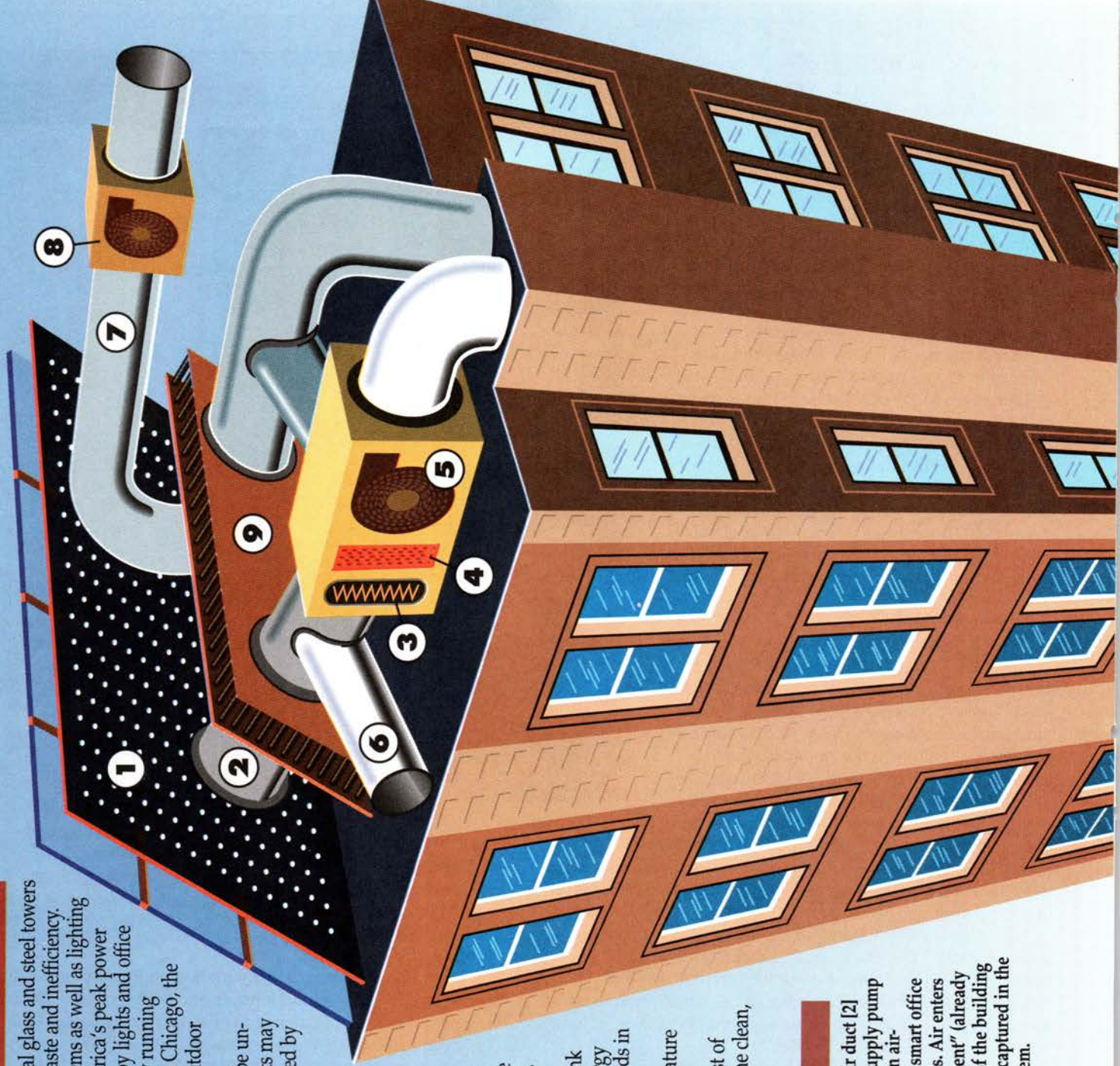
Office buildings are more than inefficient — they can be unhealthy. Airtight and chemical-laden, office environments may cause "sick building syndrome," a condition characterized by fatigue, nausea, and respiratory illness. Volatile organic compounds and formaldehyde from building materials, paints, adhesives, and furnishings are just some of the contaminants that can make indoor-air-pollution levels in new buildings up to 100 times higher than those found outdoors.

Office design doesn't have to be "business as usual." Although state energy codes promulgated since the mid 1970s have forced new offices to be designed with an eye toward conservation, there's still room for improvement. Two vanguard projects, the Natural Resources Defense Council's New York City headquarters and the NMB Bank complex in Amsterdam, prove that truly innovative energy conservation is achievable: The NRDC cut its energy needs in half, while NMB Bank uses one-seventh of the energy consumed at most other Dutch banks. Both structures feature measures to reduce indoor-air pollution.

The hypothetical project depicted here borrows the best of these buildings to create a structure that may resemble the clean, energy-efficient office buildings of the future.

HEATING AND COOLING*

Solar panels [1] absorb heat, which is funneled via the hot-air duct [2] through an air filter [3] and heater [4], and blown by an air-supply pump [5] to the shadow side of the building. Rather than depend on air-conditioned air to cool the building throughout the year, the smart office building takes advantage of outdoor air during chilly months. Air enters into a duct [6] and is circulated throughout the building. "Spent" (already circulated) air is routed through a duct [7] and is blown out of the building by an exhaust fan [8]. "Waste" heat from the circulated air is captured in the heat exchanger [9] and rechanneled through the heating system.



WINDOWS

Low-emissivity plastic film, layered between two panes of glass, senses the difference between "visible" light and "thermal" light. Southern-exposed windows are treated with low-intensity film to reflect heat and keep offices comfortably cool; northern-exposed windows are treated with a higher-intensity film, allowing office space to absorb heat. All windows open and close, and all windows have blinds to shade summer sun.

LIGHTING

Clerestory windows [A] funnel light from sunlight-exposed offices into dark corridors. Low-wattage fluorescent tubes [B] draw 75 percent less energy than standard incandescents, allowing for more efficient distribution of light. Task lighting [C] illuminates only necessary workspace on each desk. Occupancy sensors [D] turn individual office lights on and off automatically when someone enters or leaves a room.

ATRIUM

Beyond its aesthetic appeal, a plant-filled atrium creates its own microclimate, keeping air from becoming dry and stagnant and maintaining a healthy humidity level.

A variety of plants — spider, aloe, and bamboo to name a few — filter airborne volatile organic compounds.

Latex paints, all-wood furniture, wool carpeting secured without glues or adhesives, and particleboard sealed with plastic laminate to eliminate off-gassing combine to cut the health effects of building chemicals.

SAFER BUILDING MATERIALS

TOWER POWER

*The heating and cooling system shown is intended for a temperate climate. The system would need to be applied to a relatively small building such as the eight-story one depicted, in which all sides are exposed to the exterior.

Graphics by Scott MacNeill



SELLING IT!

THE MAKING OF MARKETS FOR RECYCLABLES

Faced with growing mounds of trash and dwindling space to dump it, sanitation officials from Seattle to Sarasota are turning to recycling as the most environmentally sound way out of the garbage mess. Yet in their zeal to mandate massive curbside collection programs for glass bottles, aluminum cans, and other recyclables, most communities are overlooking a fundamental principle in the recycling process — you've got to sell the stuff to someone.

Collecting is not recycling. Until

sending prices plunging; supplies of others fluctuate so widely that manufacturers won't commit themselves to using them.

Take yesterday's news. (Please.) That's what recyclers are asking buyers to do with the 4.4 million tons of old newspapers that were collected in 1988 (the most recent year for which figures are available).

Mandatory state collection laws and stepped-up interest in recycling have created an oversupply of old news, leaving prices ranging from a high of just \$30 a ton to minus \$40, meaning that some towns in New Jersey and New York are *paying* buyers \$40 a ton to take unsorted, dirty bundles away.

Gambling that recycling is not a fad, some newsprint companies in the Southeast and Pacific Northwest are on average spending \$100 million

NOW THAT COMMUNITIES ARE COLLECTING RECYCLABLES AT A FRANTIC RATE, WHO IS GOING TO BUY ALL OF THE STUFF?

the nation's 1.5 million tons of collected bottles, or the 800,000 tons of recovered aluminum cans, are converted into new products and sold to new customers, the recycling process isn't complete.

Ironically, the millions of households that are now separating their trash for recycling are fueling a serious mismatch between the supply of some recyclables and the demand for them. Gluts of some materials are

to retool their mills so they can meet future demand for recycled newsprint. Until the mid 1990s, when more retooled mills come on line, the market for old news "looks grim," says Jamie Hill, a recycling research analyst at the National Solid Waste Management Association.

Don DeMeuse, president of the Fort Howard Corp., a leading wastepaper recycler, in August told the 9th National Recycling Congress:



BY BILL BREEN



Recyclers recovered 20 percent of used PET bottles in 1988, but manufacturers still can't get enough of them.

"Cities may have enjoyed successful separation and collection programs, but things fell apart when they discovered that no markets exist for their collected [recyclables]. The ultimate indignity is sending those collected materials to the landfill. And believe me, that has happened over and over again."

So how are the markets doing? "The markets stink," said Gary Petersen, vice president of Waste Management of California, in a speech before the National Recycling Congress in San Diego.

Here's a market-by-market run down of how things stand — for the time being.

Gleaning Glass

Demand for waste glass, or cullet, is strong. Buyers want *more* than the 1.5 million tons of glass containers recovered in 1988. Mixing cullet with virgin materials to make new glass containers affords manufacturers hefty energy savings, because cullet melts at a lower temperature than sand, feldspar, and the other raw materials that are refined into glass.

The real bane for glassmakers is not a supply problem, but a *quality* problem. Since two-thirds of the glass made in the U.S. is clear and about one-tenth is green, sorting the glass by color — keeping the green Heineken bottles separate from the clear Diet Coke bottles — is essential for ensuring that the new containers match the color standards requested by bottle buyers. They are particularly wary of unseparated bottles, which require hand-sorting at a Materials Recovery Facility, where color separation is more difficult to control because of breakage.

Also, if well meaning consumers mix metal bottle tops or ceramic coffee mugs with glass bottles that are bound for a recycling center, they may end up trashing the whole load.

"THE ULTIMATE INDIGNITY IS SENDING THOSE COLLECTED [RECYCLABLES] TO THE LANDFILL. AND THAT HAS HAPPENED OVER AND OVER AGAIN."

— DON DEMEUSE OF FORT HOWARD CORP.

Buyers will reject a ton of glass that's contaminated with a single ceramic mug. As mandated recycling programs increase the supply of recovered bottles that aren't separated, buyers will reject even more batches that are contaminated.

"We're not a charity," says Chaz Miller, director of recycling for the Glass Packaging Institute, an industry trade group. "We can't recycle glass containers on good intentions, and we can't keep changing the recipe for raw materials and cullet."

Curbside collection of separated bottles promises to improve markets because municipalities provide glass-making plants with pre-sorted bottles. Processing facilities at the plants, which remove the likes of aluminum from neck rings and caps, will further enable manufacturers to use recovered glass.

Yet while 27 plants across the nation have recently purchased the \$500,000 processing equipment to keep their glass supplies contaminant-free, most manufacturers "want to see a glut" of recovered glass before they invest in the expensive new technology, says Kevin Dietly of Temple, Barker, and Sloane, a Boston-based consulting company that recently completed marketing reports on recycled glass and aluminum for the federal Environmental Protection Agency.

The most promising use for waste glass is where quality is of less importance. Crushed, color-mixed glass can replace as much as 20 percent of the stone and sand used in a conventional asphalt mix to produce "glassphalt." In less than four years, New York City has used about 30,000 tons of mixed cullet that couldn't be sold for glassmaking. Now, 412 miles of

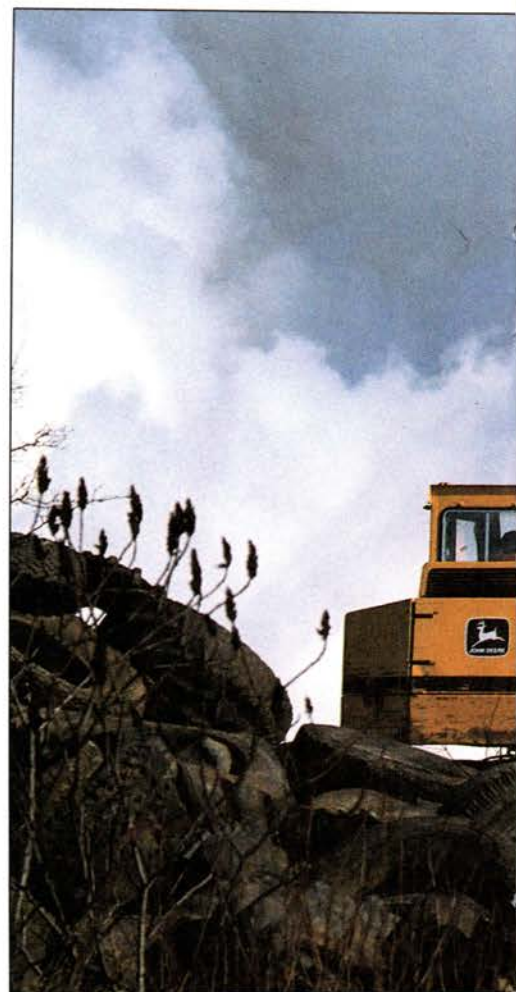
glassphalted roadways winding through Manhattan and Brooklyn sparkle under the city lights.

Tires: Slice, Dice, and Then What?

In 1988, American drivers threw out about 220 million tires. Those tires joined as many as three billion others dumped illegally in warehouses, woods, old mines, and abandoned houses. Once discarded, they're ideal nests for breeding rats and mosquitoes. Loaded with petrochemicals, they also present a serious fire threat. And they can weather the elements for hundreds of years without deteriorating.

Despite the gargantuan supply, 1988's recovery rate for tires peaked at a wimpy five percent. None of the recycling methods have been attractive enough economically even to keep up with newly dumped tires, much less make a dent in the pileup of discards.

Part of the problem for entrepreneurs trying to create markets for recovered tires is that manufacturers are constantly altering the design of tires to improve performance — and who can argue with that? As manu-



facturers add a wide mix of chemicals, minerals, natural fibers, and metals to the natural and synthetic rubber recipe, entrepreneurs must cook up new ways to efficiently break down tires into components that can be reused, says Bill Vincent of Tire Gator in Fort Worth, Texas, one of the largest tire shredders in the nation.

Last year Tire Gator chomped four million tires into "crumb rubber" particles for use as a rubber-based asphalt. Mr. Vincent claims that even though rubber-asphalt costs 50 percent more than concrete, it saves money in the long run because it has three times the life span.

According to Franklin Associates, Ltd., a consulting firm that recently completed a marketing report on recovered tires and paper for the EPA, there is no single solution for taking a big bite out of the country's tire pile. One method the report calls "promising" will anger some environmentalists — the incineration of tires to recover energy.



STEPHANIE BERGER / NYC DOT

Crushed glass, ready for NYC's roads.



DANIEL DUTKA

Last March, 14 million used tires burned out of control for 17 days in Hagersville, Ontario.

Oxford Energy's Modesto Energy Project in Westley, Calif., features the most ambitious effort for using tires as fuel. The 14.4-megawatt facility burns on average 4.5 million tires annually, producing enough electricity to power 15,000 homes. Employing extensive pollution-control devices (including an ammonia sprayer to remove nitrogen oxides and scrubbers to eliminate sulfur compounds), the plant burns tires within California's stringent air-pollution guidelines. Even so, Oxford Energy has encountered opposition to the siting of additional facilities in Connecticut and New York.

So far, burning tires to recover fuel doesn't amount to a hill of beans when compared to the country's tire mountains. In 1987, tire incineration eliminated just nine percent of all the tires generated that year. Eyeing the remaining supply, quite a few entrepreneurs are looking for new things to do with old tires, from using whole tires as barrier reefs and breakwaters (on the New Jersey

coast) to using granulated tires in carpet backing and door mats (plants are doing this in Minnesota and Ohio).

Plastics Are Recyclable — In Theory

According to the Office of Technology Assessment (OTA), one group of materials which needs market development on both the supply and the demand side is plastics. Municipal bans on retailing some plastics have spurred manufacturers to undertake recycling initiatives at a frenzied rate. Even so, the overall recovery of plastics for recycling totaled just one percent of all the plastics manufactured in 1988.

The only plastics with demonstrable market value as recycled materials are the high-density polyethylene (HDPE) in milk jugs and the polyethylene terephthalate (PET) in soda bottles. PET and HDPE are easy for consumers to identify and separate, making them convenient to collect.

PET, at \$160 a ton, and HDPE, at \$140 a ton, are among the most valuable materials in the garbage pile, second only to aluminum (worth up to \$1,000 a ton). Recycled HDPE is mostly used to supplement virgin resins in bottles. PET is recycled into dozens of end products, including scouring pads, fence posts, parking-space bumpers, and fiberfill for ski jackets and sleeping bags. Yet according to environmentalists, these secondary products only delay the day when the plastic material gets dumped, which is why recyclers haven't "closed the loop" on PET and HDPE. (A closed loop occurs when, for instance, a glass bottle is collected and processed back into the same commodity — another glass bottle.) Besides, the demand for parking bumpers made from recycled plastic will never equal the supply of tossed pop bottles.

An open loop for plastics doesn't affect manufacturers that use post-consumer PET. They can't get enough of the stuff. Last year Wellman, Inc., recycled two-thirds of the PET that was pulled out of the nation's wastestream. The New Jersey-based firm ships the PET plastic to plants in Pennsylvania, South Carolina, and the Netherlands, where the bottles are cleaned of caps and paper labels and then processed into raw polyester material that's fashioned into carpet fibre and other products. Wellman alone is meeting most of the needs of all the market niches currently identified for PET plastic.

"Procter & Gamble, Sonoco Graham, and Lever Brothers have all announced up to 30-percent recycled content for their [plastic] products, but there's no way they can [reach] all 30 percent because it just isn't out there," says Caroline Mixon, recycling manager at Wellman. "We need a greater supply." Of course, the plastic is out there, it just isn't being collected.

According to the Society of the

"TODAY'S MARKET SYSTEM OPERATES ON THE FICTITIOUS PREMISE THAT RESOURCES ARE LIMITLESS AND DUMPS ARE FREE."

— WILLIAM SHIREMAN OF R.W. BECK AND ASSOCS.

Plastics Industry, demand for plastic is very high and is expected to increase over the next decade, which translates into promising markets for easily recoverable plastics like PET and HDPE. But how about ephemeral packaging plastics that aren't PET and HDPE? [See "Garbage at the Grocery," Sept/Oct '89 — *the editors*.] What becomes of the plastics in computers, typewriters, cars, refrigerators, and dozens of other products? And who's dealing with mixed-plastic resins?

Theoretically, any type of plastic can be recycled. But a plastic, or any other material, isn't truly "recyclable" until there's a market for it. Right now, the cost of collecting and processing plastics from old appliances and furniture could make the whole enterprise a loser. According to the OTA, market demand for post-consumer plastics from durable goods is negligible, meaning that most of the material gets dumped.

Aluminum: Recycling Gold

When it comes to recycling, the all-aluminum container is the marketing success story. Recovered aluminum cans represent considerable energy savings, and demand is very strong. Recycling aluminum containers from scrap saves about 90 percent of the energy required to produce the same product from alumina (processed bauxite). Aluminum containers are easily reused because they consist of a combination of similar alloys that the manufacturer can readily identify and separate.

Generally, the only other material that's added to scrap during melting and reforming is primary alumina to

"sweeten the mix" for meeting a buyer's specs. Most analysts agree that the best use for an old aluminum can is a new aluminum can.

"We're closest to closing the loop on this one," says Kevin Dietly, the marketing consultant retained by the EPA. "The aluminum can represents so much stored energy that it's tremendously helpful to get it back into the manufacturing process."

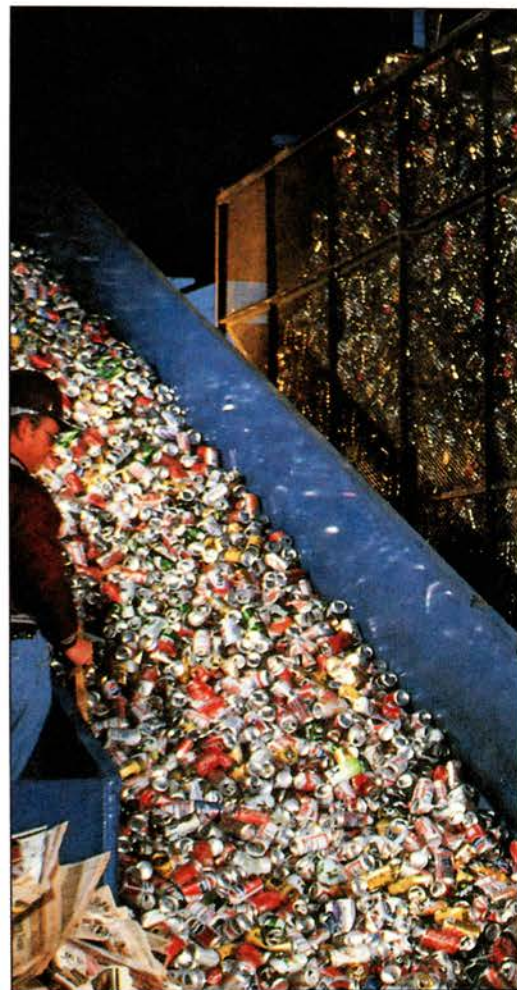
On the supply side, recycling programs are putting big numbers up on the board. Spurred by the passage of a cluster of bottle bills between 1977 and '81 (when reducing litter, not saving landfill space, was the paramount environmental concern), the aluminum-can recovery rate has grown from 15.4 percent in 1972 to last year's 60.8 percent. Street dealers are shelling out 35 cents for a mere pound.

The aluminum can is by far the most valuable commodity in the garbage pile. The only barrier to continued growth in the market for recovered cans is an expected slowdown in the aluminum beverage can's overall market share, due to increased competition from plastics. (Consumers don't ask for aluminum cans — or any other container. They ask for what's in the can. To protect and expand their market share, aluminum-container makers are constantly looking for new things



COURTESY OF WASTE MANAGEMENT, INC.

Today's throwaways, tomorrow's fiberfill.



to put into their cans, like peanuts and beef jerky.) Nevertheless, recovered aluminum beverage containers is one market where demand and supply are strong, and are expected to remain so.

Leveling the Playing Field

It doesn't do any good to set goals of collecting 50 percent or even 25 percent of our discards if we don't have a similar commitment to consuming all of those recovered materials — as we're close to doing with the aluminum can. Yet recyclers still face an uphill battle in transforming recovered waste into marketable commodities.

In the 19th century, when the nation viewed natural resources as inexhaustible, the federal government encouraged extractive, virgin-production industries (read mining and clear-cutting trees) by rewarding them with such tax breaks as virgin-depletion allowances, outright subsidies, and artificial price supports



COURTESY OF WASTE MANAGEMENT, INC.

San Jose's recovery facility processes two tons of aluminum cans daily — buyers pay up to \$1,000 a ton.

which are still on the books.

"We've created a situation where recycled-content products can't compete against lower-priced, virgin materials," said San Diego County Supervisor Susan Golding in a speech before the 9th National Recycling Congress. "The concept of 'leveling the playing field' has become a catchphrase for saying: 'Let's neutralize the advantages given in the past to virgin-resources industries by giving these same advantages to recycle-based industries.'"

Obviously, industries that depend on virgin materials would fight any attempt to repeal the preferences they now enjoy. But there are other ways to eliminate inequities and tip the balance toward recycling, including:

- **TAX CREDITS** that reward businesses for purchasing recycling equipment and increasing their use of recycled material. Because of the many disincentives for recycling at the federal level, states like Oregon, California, Pennsylvania, and New Jersey are encouraging recycling industries by offering income-tax credits for

recycling-collection trucks purchased by waste haulers, and wastepaper balers bought by grocers.

According to Jerry Powell of *Resource Recycling*, Oregon's 35-percent credit has resulted in \$11.4 million in rollbacks to Smurfit Newsprint (a leading manufacturer of recycled-content newsprint) for the expansion of its deinking system and other purchases. A study by the Oregon Department of Energy found that among the companies that received tax credits, 43 percent said they were a strong incentive for investing in recycling.

- **SALES-TAX EXEMPTIONS** for products made with recycled materials could spur consumer demand for them. Of course, exemptions for isolated products are sure to encounter broad opposition from manufacturers whose products aren't deemed "recycled." Environmentalists also fear that exemptions could lead to government's increased dependence on big business-lobbyists as the ultimate arbiters of a material's "recyclability." Groups like the National Recycling

Coalition are working to define just how much recycled content a product requires before it could be labeled "recycled." In Congress, Rep. Gerry Sikorski (D-Minn.) has introduced a bill that would in part require the development of classification standards for recyclable commodities.

- **ADVANCE DISPOSAL FEES** could be levied by states (or, better yet, the federal government) on manufacturers to help municipalities cover the cost of recycling or dumping products ranging from aluminum cans to disposable diapers. The fees would approximate the average municipal cost of recycling to reflect the true cost of operating a recycling-oriented system.

William Shireman, recycling specialist for the R.W. Beck and Associates consulting group, explains that if a surcharge of \$150 a ton were imposed on *virgin* PET resin, a manufacturer would realize savings and spur markets by purchasing *recycled* PET resin. In California, the proposal is supported by an unlikely alliance — Californians Against Waste, a grassroots environmental group, and the California Manufacturers' Association, a trade group.

The reason why support is so broad is because the details are so fuzzy. Once the concept is worked out on paper, there will likely be major differences between environmentalists and manufacturers. Nevertheless, by assessing disposal and recycling costs, advance disposal fees could fuel the development of new markets for recycled-content products.

"To achieve market development over the long term, industry must internalize the cost of disposal ... and recognize that recycling embodies a closed-loop economy — a new system of stewardship and renewing resources," says Mr. Shireman. "Today's market system operates on the fictitious premise that resources are limitless and dumps are free."

THE TRUTH ABOUT TAMPONS



// G

THE HEALTH AND ENVIRONMENTAL IMPACT OF SANITARY PROTECTION PRODUCTS

entle glide," "blooming action," and "petal soft," read the pastel boxes. Even the word "tampon" sounds soft and fluffy, like "pom-poms." Fifty to 70 percent of American women use tampons. They look like pure, white cotton. Of course they're sterile ... aren't they? Well, some tampons still contain some cotton, but viscose-rayon is now the most common fiber. "Deodorant" tampons are doused with fragrance chemicals, a marketing ploy aimed at a woman's shame about

BY HANNAH HOLMES

**BORON, ALUMINUM,
COPPER, WAXES,
SURFACTANTS,
ALCOHOLS, ACIDS,
NITROGEN COMPOUNDS,
AND HYDROCARBONS
CAN BE LEACHED
FROM TAMPONS.**

—A 1981 FDA STUDY

—A 1981 FDA STUDY

menstruation — a tampon inside the body has no smell. The strings may be waxed. Most tampons are treated with a surfactant, called polysorbate or Tween-20, to improve absorbency, says Lillian Yin, who heads the federal Food and Drug Administration's (FDA) Ob-Gyn-devices branch. "There are a whole lot of other things in there," she adds, but according to the industry and the FDA, these other things are proprietary and none of your business.

However, a 1981 FDA study found that dozens of elements (such as boron, aluminum, and copper) and compounds — waxes, surfactants, alcohols, acids, nitrogen compounds, and hydrocarbons — could be leached from tampons. By weight, a few of these residuals accounted for .05 percent of an o.b. tampon; at the other extreme, 3.8 percent of the Playtex Deodorant tampon was taken up by a plethora of residuals.

Manufacturers voluntarily list some ingredients on the box. But fragrance, for example, is listed only generically. So while Dr. Bruce Dan, an editor at the *Journal of the American Medical Association*, characterizes the deodorants as cheap perfume with organic solvents, a Playtex spokesman states that Playtex's perfume supplier won't disclose the ingredients. Ironically, FDA does require ingredient labeling on external products like shampoo and fingernail polish.

Tampons are not sterile, by the way. Ethylene oxide was once used to sterilize tampons, but it was discovered that the toxic gas left a residue. Currently, doctors see no need for sterilization. Microorganisms find the dry fibers unappealing; also, the vagina itself is already a microbial garden.

When it comes to tampons, the FDA hasn't hastened to

inform and protect women. Tampons were unregulated until 1976. Then the 1976 Medical Devices Amendment said that any new tampon that was "substantially equivalent in safety and effectiveness" to one already on the market didn't need to be safety-tested. Simultaneously, the humble cotton tampon was being deposed by plugs of superabsorbent chemicals, hi-tech foam, and synthetic fibers like polyacrylate rayon, viscose rayon, and polyester. Nonetheless, says Dr. Raju Kammula of the FDA's device evaluation division, no new tampon was deemed "nonequivalent." High-absorbency tampons were subsequently tied to an increased risk of menstrual Toxic Shock Syndrome (TSS): Most of the superthirsty synthetics were yanked off the market

by tampon companies — not by the FDA.

In 1982, some years after TSS began killing women, the FDA convened a task force that attempted to hammer out voluntary standards for manufacturers on: ingredients labeling, absorbency, the wicking potential of the withdrawal string (invaders can climb a wet string), the tampon's potential to irritate skin and mucous-membranes, and bacteria-promoting characteristics of the fiber. The task force dissolved after two years when the consumer contingent quit, charging that the tampon industry was withholding important research. Consequently, the standards languished.

In 1990, ten years after the link between high-absorbency tampons and TSS was discovered, the FDA was finally forced by a consumer-group lawsuit to issue a mandatory standard for absorbency-labeling of tampons. The tampon makers don't reveal the number of grams a tampon absorbs, but a *range* it falls into. A tampon's absorbency rating is determined by the grams of tinted saltwater it takes in, which may not correlate to actual absorbency in use.

What became of the standards to govern ingredients labeling, biocompatibility, string characteristics, and irritancy potential? Ms. Yin explains that for the FDA to determine such standards would take too much time and invite industry dissent. The standards might even have to be updated as technology advanced, she adds.

The Toxic Shocker

"I was standing at the front door and I suddenly felt like I had been hit from behind by a Sherman tank. I felt my knees buckle and thought my head was going to roll off my shoulders," says Cheryl Schwartz, who put herself to bed in Northridge, Calif., on the third day of her period in February, 1979. "Several hours later, I woke up vomiting, I had difficulty breathing, and a rash on my stomach."

Over the next two days, fever, headache, sore throat,

Sanitary Necessities



Kleinert's All Gum Rubber Sanitary Apron
Made of pure gum rubber. Easily cleaned. Will not cling to the body and will prevent wrinkles when worn under silk dresses. Width, about 20 in.; length, about 21 in. Colors: Natural rubber or flesh color with crossbar voile top. State color. Shpg. wt., 4 oz.
25K5045..... 39c



Kleinert's Sanitary Step-In
A very popular and serviceable sanitary garment. Made of a good grade cotton voile top and pure gum rubber. Has elastic at the waistline. A loose fitting, comfortable and light garment. Colors: Flesh or white. Sizes: Small, medium or large. State size and color. Shipping weight, 4 oz.
25K5054—Each..... 45c



Sanitary Bloomers
An ideal sanitary garment that will give you comfort, security and protection. Made of crossbar cotton voile top with pure gum rubber seat and elastic at waistline. The leg openings are trimmed with Valenciennes lace. A garment that we know you will like. Comes in sizes: Small, medium or large. State size. Flesh color only. Shpg. wt., 5 oz.
25K5055..... 89c



Kleinert's Silk Sanitary Apron
Lightweight sanitary apron made of rubber coated silk. It affords proper protection and can be worn under the lightest weight garments. Will also prevent wrinkles when worn under silk dresses. Has crossbar Rayon voile top and well bound edges. Pink only. Width, about 20 1/2 inches. Length, about 21 inches. Shipping wt., 2 oz.
25K5053..... 79c



The sanitary goods shown on this and the opposite page are of standard quality. We do not handle inferior grades, but be-







muscle pain, confusion, lethargy, hallucinations, and finally, shock set in. In the hospital, puzzled doctors treated the symptoms as best they could, always one step behind the disease. It attacked her kidneys, pancreas, liver, heart, and lungs, of which doctors amputated a part. Two weeks later her skin peeled, her hair fell out, and orange-peel sized hunks of skin shredded off of her hands and feet — a good sign. Ms. Schwartz, whose family had made burial arrangements, says "I survived to fight these plug companies." She operates the International Toxic-Shock Syndrome Network in Beverly Hills.

TSS, almost unknown in 1979, is caused by a toxin released by the bacterium *Staphylococcus aureus*, normally a peaceable tenant of the human nose and skin. This critter may hijack a finger or tampon for a visit to the nether regions of ten to 25 percent of women at any given time, where it normally blends in with the local population of microorganisms. It may be present during one period, and gone the next. One to three percent of the time, however, the visitor is a version of *S. aureus* that produces the TSS toxin. If the bug is comfortable (tampons, especially very absorbent ones, help), it may multiply logarithmically.

Toxic Shock is not history. In April, 1990, a 32-year-old Arizona woman became ill while her husband and two children were away for a few days. She pulled down a shower curtain and upset furniture before dying, says Tom Riley, an Iowa attorney who has handled nearly 100 TSS cases. Mr. Riley says police found super-absorbent tampons at the house. Most of the 45 women who were tallied as TSS survivors in 1989 were wearing a tampon, according to the Centers for Disease



THE SPONGE

Control (CDC), which is notified of about one case in five.

The situation is better than it used to be. Ten years ago, Procter & Gamble made a bid on the tampon market with Rely, a giant tea bag stuffed with yellow polyurethane foam cubes that could swallow about ten times their volume in liquid, and white carboxymethylcellulose (CMC) confetti that turned to clear slime when wet. A Rely tampon could absorb 18.5 grams. Rely's competitors were also stuffing torpedoes with new synthetics. In 1980, CDC logged 812 menstrual TSS cases, including 42 deaths.

A few developments slowed the death rate. Rely died of ignominy and lawsuits when a 1980 CDC study showed the brand was associated with 71 percent of menstrual TSS cases. In 1985, a lawsuit and a scientific study convinced Playtex and Tambrands to forswear polyacrylate rayon. Tambrands has also revived "original regular," an all-cotton plug, and stopped using CMC, called "modified cellulose" on the label. The o.b. brand k.o.'d the super plus model of its cotton and viscose-rayon tampons. In 1981, it was reported that Kotex used CMC, but Kotex refuses to discuss ingredients. Overall, absorbency, which ranged from 10.3 to 20.5 grams in the early '80s, currently falls between six and 15 grams. Since 1982 an FDA warning on tampon boxes has helped women recognize TSS symptoms. Now, the Centers for Disease Control estimates the annual incidence of TSS is one in 100,000 menstruating women, one-tenth the 1980 level.

Dr. Philip M. Tierno, Jr., estimates differently. A TSS specialist at the New York University Medical Center in Manhattan, Dr. Tierno says



THE CUP

IF THE FDA ISN'T GOING TO SET STANDARDS

FOR TAMPONS, "THEN YOU HAVE TO ASK, WHAT IS THE REASON FOR FDA'S EXISTENCE?"

—DR. PHILIP M. TIERNO, JR.,

A TSS SPECIALIST.

that for every woman he sees whose symptoms match the strict CDC definition of full-blown TSS, he sees five cases that aren't counted because the symptoms fall just short. For example, a woman may have the necessary rash and diarrhea, but her fever is 101, not 102, or her systolic blood pressure is 91, not 90. "The tampon manufacturers say, 'We don't know what it is, but we know it's not *that* [TSS].' I've looked at hundreds of cases," says the doctor, who refused repeated offers of Procter & Gamble grant money during the TSS crisis, opting to testify in court on behalf of TSS victims. "I can pick it out." The CDC agrees that mild Toxic Shock Syndrome occurs, and goes unrecorded. The tampon giant, Tambrands, on the other hand, disagrees. "We're not aware that the incidence of TSS is greater than what the CDC reports," says spokesperson Bruce Garren.

Tampons present other problems. The perfume in "deodorant" tampons can disrupt a woman's microbial balance and cause internal irritation. The sheer absorbency of tampons can cause unhealthy dryness, cell peeling, and tiny ulcers. Shreds of tampon fiber have been found embedded in vaginal ulcers and tissue. (Dunk your favorite brand in a glass of water and watch the fibers fly.) The "petals" on plastic applicators have been faulted for scratching women's insides, causing post-period bleeding. Women who use tampons after their period to staunch unusual bleeding, or even normal discharge, take a greater risk of dryness, peeling, and ulceration. This, too, can cause unusual bleeding, perpetuating tampon use. These little traumas leave delicate membranes vulnerable to infection, caused by either an imbalance in the microbial garden, or invaders.

On The Tampon's Tail

While the tampon holds the fort, other products are vying for entry. Unless women adopt the old ritual of Vancouver's Nitinat Indian women, gathering for a four-day tea party on moss couches each month, these are the alternatives to the commercial tampon [see "Alternatives," page 54, for ordering information]:

THE PAD: One percent of menstrual TSS cases are associated with sanitary pads (17 of the 1,824 cases reported between 1980 and 1983). Pads also offer a small risk for



THE RAG

other problems. *E. coli* is a bacterium that behaves well in its native anal region, but misbehaves elsewhere. Dr. Tierno says that, using blood as transportation, *E. coli* can infect the urethra, and may then ascend into full-blown cystitis (bladder infection). *E. coli* will also digest blood, causing odor.

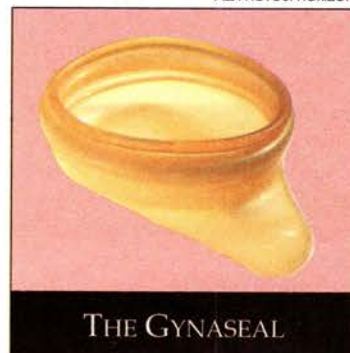
The baby powder used in some pads may not be as benign as it sounds. A World Health Organization (WHO) document on talc and cancer cites a study that "suggested an approximate doubling of the risk of ovarian cancer among women after perineal use of talc." The theory has been around for a decade; WHO considers the data to be inadequate to draw any conclusions.

A gelling chemical, sodium polyacrylate, is also used in some pads. While it has been criticized for causing rashes when used in diapers, its presence in pads hasn't been debated.

THE SPONGE: With uncharacteristic vigor, the FDA squashed small businesses that in the late '70s sold sea sponges for menstrual use. Brushing aside the discovery that sponges harbor sand, fungi, bacteria, and chemicals that may come from oil spills, the FDA's Ms. Yin says the agency's concern was that women might rinse their sponges in public sinks. In 1980, marketers were forced to remove references to menstrual use. Some women still use sea sponges, available at food co-ops and beauty and health-food stores. Others even use household sponges, cut in strips. The sea sponge is linked to less than one percent of menstrual TSS cases.

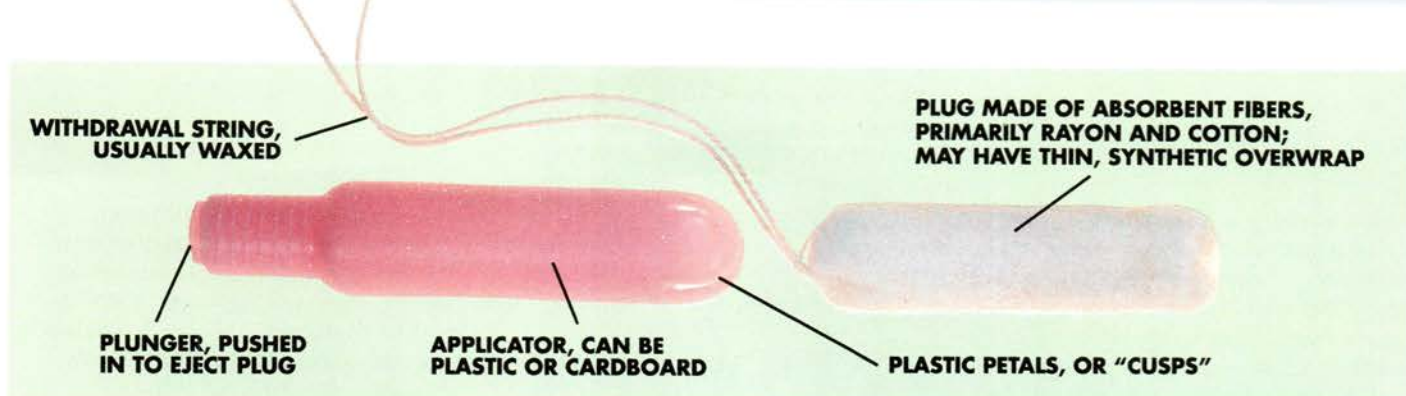
THE CUP: In the early '50s, a beige, gum-rubber bell called the "Tasset" appeared on the market. It rested upside down at the bottom of the vagina, collecting blood. A small loop served as a handle. It got rave reviews from medical professionals, but the company went bankrupt in 1972. However, a Cincinnati woman has resurrected the menstrual cup, dubbing it The Keeper. FDA accepted The Keeper as substantially equivalent to the Tasset, so no new testing was done. If wearing a diaphragm gives you cystitis, proceed with caution.

THE RAG: Washable cotton pads have never completely surrendered to disposables. Several companies still distribute them through the mail. The National Cotton Council maintains that woven cotton is not chlorine-bleached, eliminating the dioxin possibility. To avoid pesticide residues, though, at least one manufacturer



THE GYNASEAL

ALL PHOTOS: HORIZON



is looking into organically grown cotton. Dyes may be a concern for people who are chemically sensitive.

THE GYNASEAL: Something to watch for is an Australian device designed to work as a blood collector and contraceptive by covering the cervix. It can be worn 24 hours at a time, is reusable, and preliminary studies indicate a low TSS risk.

Flushed With Shame

We call it the big flush," says Cindy Zipf, a coordinator at New Jersey's Clean Ocean Action, describing the cascade of raw sewage, street garbage, and tampon applicators that pours into the ocean when old sewage systems are flooded by storm water.

After a couple of days at sea, the weary plastic flings itself onto the beach, where Ms. Zipf and her cohorts can estimate how much rain fell by the number of applicators that return — sometimes one per yard of beach. They make fishing lures out of them to raise awareness of the problem. Jay Critchley, a Provincetown, R.I., artist, also reaps the tampon-applicator bounty, building translucent pink and white sculptures, including a wearable, 3,000-applicator Statue of Liberty outfit. [See "Lifting the Lid," November/December 1989, page 15 — *the editors*]

Health professionals haven't declared "beach whistles" harmless, emphasizing instead that they should never get onto the beach. However, they agree the cold, salty ocean is disheartening for bugs used to a cuddly human host.

Consumers are to blame for putting plastic in the toilet, but it's the manufacturers who are flushing with

embarrassment over the schools of beached tampon applicators. Playtex Family Products, alarmed by Clean Ocean Action's 1985 legislative drive to outlaw plastic applicators, flirted with the idea of making heavier applicators that would sink. Playtex has also looked at biodegradable plastics. Tambrands, in a two-faced marketing move, is pushing Tampax in both plastic and paper plungers. A woman in Tambrands' 1989 plastic-tube ads burred, "I want my plastic," while the label on the paper-tube box boasts, "ecologically safe... biodegradable... no plastic to dispose of." (Both boxes are made of recycled paperboard.) Kimberly-Clark's Kotex is standing by its plastic applicator. Johnson & Johnson's applicator-free, biodegradable-cellophane-wrapped, recycled-paper-

boxed o.b. tampon looks like the beachgoer's buddy.

What happens to the parts that don't float? Actual tampons and pad-filling will degenerate into fibers in the river or the ocean, if they make it past sewage-treatment-plant skimmers and strainers. But neither tampons, applicators, nor pads should be flushed. "The idea that you can flush it and it's gone is very popular in this country," says Jackie Sartoris, an analyst with the New York City Department of Environmental Protection. "But sanitary napkins and tampons *never* belong down the toilet." At best, tampons, pads, and applicators will wear out sewage machinery as they are caught and sent to a landfill, says Ms. Sartoris. At worst, they'll be flushed straight into waterways.

Sanitary products are a tiny part of the solid wastestream. Nobody has studied what a tampon or pad does in a landfill to learn whether its population of microorganisms might survive and join other leached pollutants to affect groundwater. However, the U.S. Environmental Protection Agency has looked generally at pathogens in landfills, concluding that viruses don't fare well and bacteria like *E. coli* don't migrate if the landfill is kept dry.

Although tampons and the non-plastic parts of pads are biodegradable, and are processed in some municipal composting programs, the bugs in your backyard heap probably aren't hot enough to tackle a tampon.

Long before tampons and pads hit the trash, however, they wreak environmental havoc. Many pads are stuffed with fluff pulp that, when bleached with chlorine, can harbor traces of tremendously toxic dioxin and other

THE TAMPON ALTERNATIVES

Products:

CHLORINE-FREE DISPOSABLE PADS:

Seventh Generation sells chlorine-free pads by mail. Seventh Generation, Dept. GM, Colchester, VT 05446-1672; (800) 456-1177.

Today's Choice, chlorine-free pulp sheathed in cotton, is sold in health-food stores.

COTTON CATCH-ALLS:

Pads are \$4 to \$5 each in kits, and come in many sizes and colors.

Many Moons, #14-130 Dallas Rd., Dept. GM, Victoria, BC, V8V 1A3, Canada. Two versions: Belted, or with

wings that velcro together. Flannelette.

Moon Pads, P.O. Box 166, Dept. GM, Boulder Creek, CA 95006. Belted flannel; unbleached available.

New Cycle, P.O. Box 3248, Dept. GM, Santa Rosa, CA 95402. Fold-it-yourself flannel padding.

Women's Choice, P.O. Box 245, Dept. GM, Gabriola Island, B.C. V0R 1X0, Canada; (604) 247-8433. Super-soft fleece with nylon backing and velcro. "Wings" and velcro-added panties available.

MENSTRUAL CUP:

The Keeper, Box 20023, Dept. GM,

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YOU CAN FLUSH IT
AND IT'S GONE IS
VERY POPULAR
IN THIS COUNTRY."**

— JACKIE SARTORIS,

NEW YORK CITY DEP



organochlorines. Although FDA says the cancer risk from using pads is below the one-per-million considered regulation-worthy, chlorine-free pads are becoming available (see *The Tampon Alternatives*, below). Even if the risk of human absorption is negligible, dioxin poisons the water around pulping mills, a pervasive threat to human beings and the ecosystem.

Rayon, used in tampons, is also made from bleached pulp, meaning more dioxin downstream. The FDA can't detect dioxin in tampons. *The Toxic 500*, a National Wildlife Federation publication that ranks industrial polluters, places rayon mills at numbers 32, 71, and 278. Two of the mills spewed 46 million pounds of neurotoxic carbon disulfide into the environment in 1987.

Cotton isn't unsullied, either. A USDA survey showed that the 1982 cotton crop — and the Earth around it — received 7 million pounds of dessicants and defoliants, 17 million pounds of herbicides, and 17 million pounds of insecticides. Scant research has been done on whether these chemicals remain in finished fiber. The FDA maintains that pesticides are not present in tampons at worrisome levels.

Bleeding Green


A menstruating woman throws away an average of 250 or 300 pounds of tampons, pads, and applicators in her lifetime. A maxi pad may tip the scale at 0.5 oz.; an o.b. weighs in at about 0.1 oz. Applicator tampons and smaller pads fall somewhere in between. It's not a lot of waste. However, the wastefulness of some products is irksome. Using precious petroleum to make something as short-lived as a tampon applicator seems ridiculous. Why advise women to wrap

a used, plasticized pad in tissue and in its plastic pouch? Among disposables, o.b. deserves the waste-watcher award, while plastic-appliator tampons and plastic-encased maxi-pads vie for the heavy-waste title. The menstrual cup, sponges, and cloth pads are, from an ecological standpoint, beyond reproach.

From a personal standpoint, the choice isn't so simple. While women in some cultures see their periods as a time to celebrate womanhood, the predominating view of menstruation as an embarrassing "curse" is a

psychological obstacle to changing our habits. We could all live without the perfumed plug, but switching to a non-disposable method requires an enlightened approach to menstruation.

For example, sponges are "natural" and last months, but you've either got to pack a spare or be ready to haul one out and rinse it in the ladies room at work. Menstrual cups last 10 years *at least*, but again present a problem in the ladies room. Washable pads involve velcro, safety pins, or belts, as well as soaking and laundering. (One pad fan suggests that you reduce your dependence on commercial fertilizer by flinging the brownish soak-water into the garden.)

Whatever you choose, there are a few conclusions to keep in mind. One: No menstrual product is thoroughly regulated by the FDA. Two: Over the generations, women have stemmed the tide with everything from papyrus to wool, commercial tampons, and quartered kitchen sponges — and lived to tell the tale. Three: Whether you call them beach whistles, New Jersey seashells, LPTs (little pink things), torpedos, finger puppets, dum-dum bullets, or tube fish, plastic applicators are a waste. 

Cincinnati, OH 45220. Tan rubber cup, one size fits most (refunds available). \$35 ppd.

SEA SPONGE:

Read up on the sponge method before using one; try women's health centers or bookstores. Mail order from: InterNatural, P.O. Box 680, Dept. GM, South Sutton, NH 03273; (800) 446-4903. Three sea-silk sponges (Item #S1001) for \$4.50 plus \$2.50 shipping.

Resources:

PROBLEM-REPORTING SYSTEM

An FDA-sponsored reporting system for problems with sanitary products. Written accounts are

preferred, include your phone number. U.S. Pharmacopeia, Medical Device and Laboratory Product Problem Reporting Program, 12601 Twinbrook Parkway, Rockville, MD 20852, attn. Dr. Joseph G. Valentino; (800) 638-6725 or (301) 881-0256.

THE PRICE OF A LIFE: ONE WOMAN'S DEATH FROM TOXIC SHOCK

Tom Riley. Published in 1986 by Adler & Adler, Bethesda, MD. An attorney's battle with Procter & Gamble, makers of Rely tampons. Out of print, but three copies remain: Woodbine House, 5615 Fishers Lane, Rockville, MD 20852. Hard, \$18.95 ppd.

EVERYTHING YOU MUST KNOW ABOUT TAMPONS

Nancy Friedman. Berkley Books, 1981. 164 pages. Just what the title says, but a little dated. Out of print, try the library.

THE SANITARY PROTECTION SCANDAL

The Women's Environmental Network, 1989. 114 pages. A thorough and blistering enumeration of the sanitary-protection industry's shortcomings. The Women's Environmental Network, 287 City Rd., Dept. GM, London EC1V 1LA, United Kingdom. Softcover, 8.45 pounds sterling, ppd.

PR's Changing Face

Increasingly sophisticated public-relations tactics have forged unlikely alliances with surprising results.

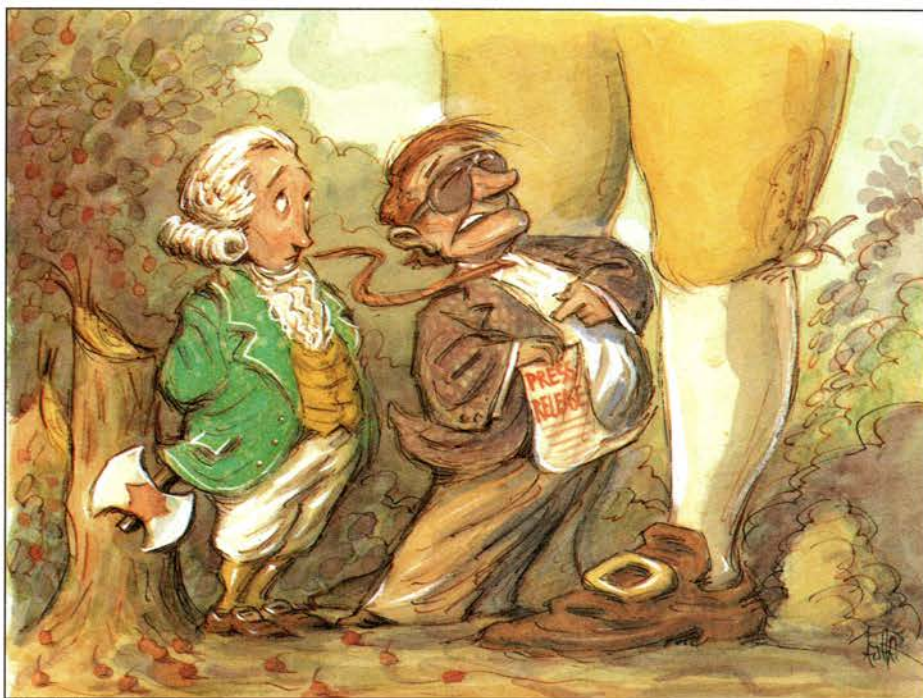
M

ary Ann Pires and I may never agree about the nature of reality, but we know how to negotiate. For my part, I wanted not just an interview, but an overview of her line of work — public relations. A vivacious, dark-haired woman in her 40s, Ms. Pires makes her living by nurturing contacts between corporations and environmental groups. Like nearly every journalist who calls a publicist, I was under too tight a deadline to gather any broad perspective on my own. She, in turn, insisted that I promise to include her in the article ... otherwise, how could she justify the time? And, by the way, would **GARBAGE** send her some copies of the piece when it appeared?

Publicists have traditionally made their livings because of their ability to make such agreements — with journalists, legislators, and, increasingly, citizens' groups. The less visible the publicists themselves are, the more successful they become. Which means most people still think of PR in its outmoded traditional form: the purveying of press releases and courting of reporters. But PR's sophistication has intensified dramatically in the past few years. PR people now mold events, as much as possible, to fit predetermined marketing strategies. They send video clips to TV news departments and subsidized "experts" to talk shows. And they increasingly look for friends outside the company, whose association with a corporate initiative will give it credibility.

It took a PR disaster, however, to make public relations visible. Exxon's Valdez oil spill wasn't only ruinous to the Alaskan coast, it spoiled the image of a company as well. Exxon CEO Larry Rawl is said to have blown his whole industry's reputation by stonewalling early inquiries about the spill and (when he finally spoke) blaming the local government and God. Instead, he should have followed the enshrined techniques that Johnson & Johnson used in their 1982 Tylenol scare: instantly admitting the company's fault and taking personal charge of the crisis. (Johnson & Johnson's then-CEO, James Burke, built a reputation on the Tylenol case, and later started a Palo Alto foundation for corporate responsibility.)

If outsiders (like the *Public Relations Journal*) proclaimed that Mr. Rawl should become a Frank Perdue of bird-scrubbing, insiders knew he couldn't have pulled it off. An old-style manager who put his feet up on the chair in meetings and yelled at subordinates, his policies had dramatically hurt morale at the company. As *Business Week* cannily pointed



BRIAN AJHAR

BY ART KLEINER

out, Mr. Rawl had spent the 1980s cutting costs and forcing people into early retirement and demotions. Exxon sacrificed not just safety, crisis-response, and training measures which might have forestalled the oil spill, but also much of its international PR staff. When reporters first called Exxon's international headquarters in New York, the operator referred them to Houston. That office, in turn, only had one staffer and an answering machine. The reporters besieged Mr. Rawl himself, who refused to talk with them for a week.

Ironically, Exxon was treated better by environmental groups than it might have been — because Exxon's public-affairs staffers had gradually, carefully forged personal relationships with the groups in the early 1980s. Exxon spent \$13 million on this activity in one year. Nearly all large oil companies had such programs; as Mary Ann Pires told me, she had managed one herself for Texaco. It was then called "constituency relations"; she would guide the company to consumer- and public-interest groups with which Texaco could build long-lasting relationships. In one case, Texaco and the Consumer Federation of America lobbied together against government-imposed credit-card surcharges. Texaco was just beginning to tackle environmental issues when the hardlining '80s hit; Texaco, Exxon, and the others gutted their programs.

Ms. Pires had already left Texaco by then to practice the public-relations craft freelance. She is probably best-known for bringing Metpath, a large medical-testing organization, together with consumer, Hispanic, and womens' groups to lobby for tougher regulations on medical laboratories. "They were very concerned

"The insulation of many senior executives is scary. They move in a rarefied environment. They don't know what an honest-to-God black factory worker thinks."

about these mom-and-pop testing operations," she said, "where the receptionist answered the phone in between doing your urinalysis. I brought the issue to the groups. It wasn't a tough sell. There wasn't any money to change hands; nobody won any dinner tickets."

Please note that a little money did change hands; Metpath paid to exhibit at one group's conference. Ms. Pires says that if a group can be bought, it's not worth buying. I'm unconvinced, but bribery clearly is not the point in most cases. "The insulation of many senior executives is scary," says Ms. Pires. "They move in a rarefied environment. They don't know what an honest-to-God black factory worker thinks" — or an unmarried mother of three, she adds, or, presumably, an environmentalist. Break the barriers through personal contact strengthened by a shared lobbying project, and both sides learn. The company becomes credible while the group gains influence.

Recently, the *PR Journal* reported an unprecedented boom in such constituency relations. Ben Corson of the Council on Economic Priorities, whose *Shopping for a Better World* guide rates corporate responsibility, says that PR people from Procter & Gamble, Shell, and Borden all sought CEP's opinion recently, to learn how to improve their ratings. This is all in addition to the wave of environmentalist and socially-responsible advertising hitting TV and magazines.

Meanwhile, the major oil companies are reassembling the PR staffs they cut. Michael Winkleman, an *Adweek* Special Reports editor who has covered public relations, thinks Iraq is a far bigger corporate motivator than Valdez. Already, constituency-building for nuclear power has begun, and similar tactics for Arctic oil drilling will no doubt follow.

Ostensibly, the purpose of such constituency-building is finding the truth. The essence of PR practice is advocacy, making a good case. "It's no accident," says Ms. Pires, "that they call it 'the court of public opinion.'" The groups she cultivates are the equivalent of friendly witnesses.

But PR people and journalists have a long-standing debate about truth, going back to the communications schools which both attended. To a good journalist, Truth exists, even if it's unknowable. In environmental matters, for instance, it may be hidden by ambiguities about climate, carcinogens, and risk. Even so, only by going after the unreachable goal of the truth do you find any understanding.

What if PR people *could* get companies to pursue the truth? What if they brought together not just *sympatico* advocates, but *all* parties to an issue, with full openness about the facts — and sought a mutual understanding? To make it work, a company would not only have to listen across that table, but also expose its secrets to outsiders. But if the credibility of a company is indeed worth millions, as you said, Mary Ann — wouldn't it pay off?

*Art Kleiner is a regular contributor to **GARBAGE** on issues pertaining to corporate environmental policies. Last year Art began working on a book called The Age of Heretics. It will be published by Doubleday in 1992.*



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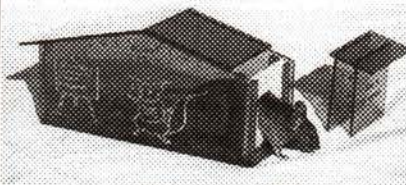
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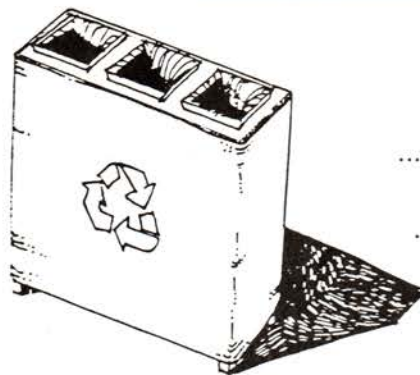
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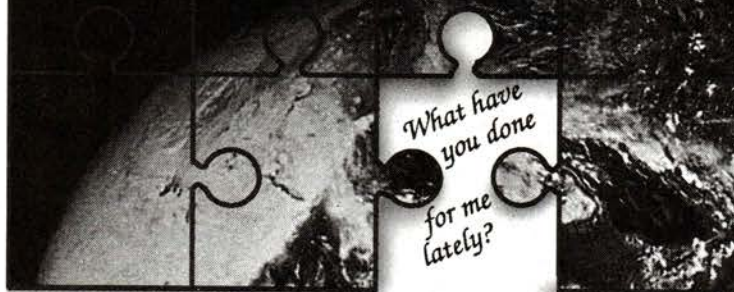
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The result has been to also seal in air pollution. The Environmental Protection Agency (EPA) has suggested that every home in the United States has between 2 and 20 times the amounts of pollution inside the home than outside. When placed in a 1,000 sq. ft. room, the Phototron™ circulates 1,000 sq. ft. of air through the Phototron™ 33 times every 24 hours. This does 4 things: Plants have always been the natural lungs of the Earth;

1- In the Phototron™ the natural respiration of plants breathe in all of the in house pollution completely filtering in the air you breathe;

2-Along with all of the carbon dioxide you exhale and convert the CO2 to pure oxygen for your health;

3- The natural transpiration of plants releases up to

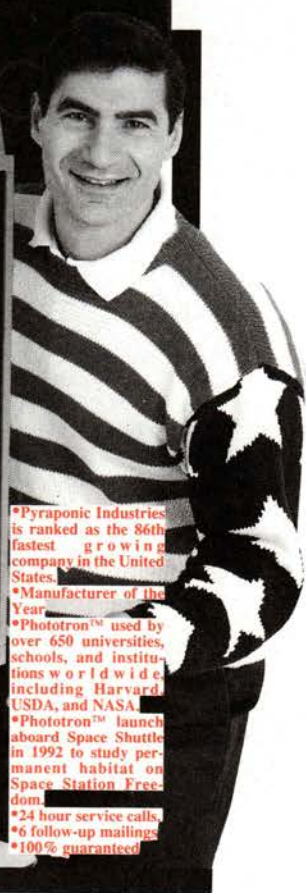
1 gallon of pure distilled, deionized water vapor back to the air for your easy breathing;

4- Aerosol air deodorizers work by coating your nose hairs with an oil of artificial smell. You breathe the same pollutants, you just don't smell them.

By introducing fragrant plants into the Phototron III's™ sterile environment, a natural air freshener is created. Your whole house is naturally perfumed with roses, gardenias, jasmine, honeysuckle, etc. The Phototron III™ will grow any plant twice as fast as nature can, producing more fruits, flowers, and vegetables. The tremendous impact that plants will have on your living environment is far more encompassing than the beauty of ornamental display, and you can take action for the health and well being of your family for just \$39.95 down, with 0% interest and payments over 90 days. With the Phototron III™, you can help save the planet naturally, painlessly, and inexpensively, as over 100,000 people have already realized.

"If you do not learn more about air pyrafication than you ever have before, I will pay you for the call. I guarantee it."

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•Manufacturer of the Year

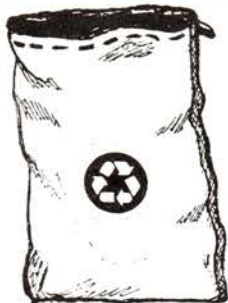
•Phototron™ used by over 650 universities, schools, and institutions worldwide including Harvard, USDA, and NASA.

•Phototron™ launch aboard Space Shuttle in 1992 to study permanent habitat on Space Station Freedom

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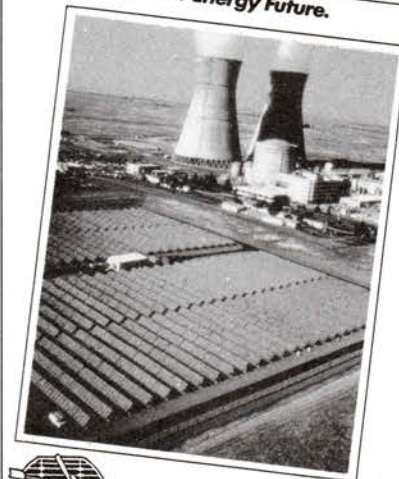
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Good Water/Bad Water

Violations of Safe Drinking Water Act, 1988

Good		Bad
Michigan ¹	0	New Jersey.....20,350
Rhode Island.....	46	Pennsylvania.....7,405
Maine.....	61	Washington ²7,094
Connecticut.....	95	Puerto Rico ²5,459
Hawaii.....	118	Alaska ²5,359

1: 1987 data

2: Federal Data Incomplete

(Sources: *Danger on Tap*, National Wildlife Federation, 1988)

Miscellaneous Facts

Calories burned shoveling snow
for one hour:

480 to 625

(Source: USDA)

Tampon applicators found on
beaches in a 3-hour national search:

16,318

(Source: Center for Marine Conservation's
1988 national beach cleanup)

Pounds of contraceptive material a
couple discards annually:

2 to 3

(Source: Merryl Winstein, author of
Your Fertility Signals)

Estimated percentage of
Americans with curbside recycling:

16%

(Source: *Biocycle Magazine*)

Holidays

Number of gifts wrapped
by average household:

30

Christmas gift-wrap market:

\$500 million

Rolls/sheets of
wrapping paper sold, 1989:

28,497,464

Packages of tags
and bows sold, 1989:

16,826,362

Greeting cards
(boxed and single) sold, 1989:

372,430,684

Number of
Christmas trees cut, 1989:

35,200,000

Success rate of
tree-recycling programs:

38%*

(Sources: Hallmark Cards, Inc.;
A.C. Nielsen, from supermarkets
with over \$4 million in annual sales;
National Christmas Tree Association;
*Resource Recycling Magazine survey)

Recycling Cities

Percentage of Wastestream Recycled

Islip, N.Y.....	35%
Seattle, Wash.....	34%
Montclair, N.J.....	30%
Springfield, Mass.....	28%
Portland, Ore.....	26%
Minneapolis/St. Paul.....	12%
Los Angeles.....	12%
New York City.....	6%
Tucson, Ariz.....	.02%
Nationally.....	13%

(Source: GARBAGE staff)

Choking Cities

Days Per Year That Cities Failed Clean-Air Standard

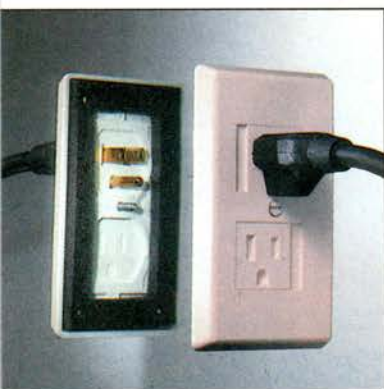
Los Angeles metro area.....	137.5
Bakersfield, Calif.....	44.2
Fresno, Calif.....	24.3
New York metro area.....	17.4
Sacramento, Calif.....	15.8
Chicago metro area.....	13.0
San Diego, Calif.....	12.3
Houston metro area.....	12.2
Knox County, Maine.....	11.1
Baltimore, Maryland.....	10.7

(Source: EPA ozone data, 1986-88)

ILLUSTRATIONS BY ROBERT PIZZO

Green Goodies, Games, and Garbage

PRODUCTS



CareCovers cut overall indoor-air infiltration by 15 percent.

HORIZON

Outlet Covers that Insulate

A better name for electrical outlets might be breezy inlets. These benign-looking patches hide holes in your wall that are a major source of cold, wintry air. One study concluded that outlets are responsible for 20 percent of a home's air infiltration — almost twice what comes in around the windows.

There are ways to reduce this little gale. You can shut off the power and install a foam-rubber gasket behind each plate. While this will slow the air that comes in around the outlet's edges, it neglects the openings in the middle where the plate fits around the plug receptacle. This intersection is the target of the CareCover.

The CareCover is a plate that not only fits around the receptacle's plug-holes, but also covers them with a spring-loaded trap door whenever they're not in use, restricting the flow of air. The manufacturer's studies indicate that CareCovers cut overall air infiltration by 15 percent. The federal Department of Energy, which gave the CareCover an innovation award, estimates that the covers pay for themselves in one year.

Because the sliding

doors are quite stiff, they also serve as an extra obstacle to curious toddlers. The cover fits over the plug-receptacle, not around it, so matching the receptacle color to the plate color is unnecessary.

The CareCover retails for about \$3. To locate a retailer, or to order by mail (\$2.98 ppd.), contact K-Products Group, 724 Commerce St., Dept. GM, Aberdeen, SD 57401; (800) 843-1660.

Forest-Preserving Presents

From The Rain Forest offers Brazil fruits and nuts that support sustainable rain-forest "farming."

From The Rain Forest works with Cultural Survival, a Cambridge, Mass., non-profit group that is helping Brazilian nut-harvesters build a processing plant. Cultural Survival will then be able to buy Brazil nuts directly from the indigenous people who collect them, thereby eliminating

middlemen and increasing the harvesters' earnings.

Marketing the fruits and nuts gives harvesters an alternative to razing the rain forests for short-time logging and cattle-ranching profits. One team of scientists has concluded that, over 50 years, the harvesting of native rain-forest goods like fruits, nuts, rubber, and cocoa would generate twice the income from ranching or logging.

These goodies come in good packages. The first order arrives in a metal can with a recycled-paper label printed with vegetable inks.

Refills come in plastic bags. An introductory deal, good through Christmas, offers you one 30-oz. can of fruits



Fruits and nuts — without razing the rain forest

HORIZON

and nuts, or a 12-oz. can of fruits and nuts plus a 12-oz. can of cashews, for \$12.90 ppd.

Contact From The Rain Forest at 8 E. 12th St., 5, Dept. GM, New York, NY 10003; (212) 645-7177. Outside Manhattan, (800) 327-8496.

The Planet on a Disk

Balance of the Planet, a computer game that pits a player's desire to save the world against the current economic reality, demonstrates the difficulty in reconciling the conservationist's ethic with the executive's bottom line.

The game's main component is 150 educational screens, which a player consults while changing environmental policy. As you sally forth to save the world, you are led from screen to screen, each describing a cause-and-effect relationship that your decision will affect — like the link between lung disease, coal power, industrial production, and consumer products. Describing his game, Chris Crawford writes, "150 screens, 150 equations, 150 problems. And they are all interrelated. Just like real life."

Be prepared to lose thousands of points and receive onscreen scoldings as you learn. The author promises it's possible to win. So far, **GARBAGE's** editorial staff has been big losers. When we doubled a tax on coal-burning in order to subsidize clean-coal research, we lost hundreds of points for slowing the economy and failing to halt global warming. (We gained a point for improving the lot of marine life.)

The game's weakness lies in its presumption that our rate of industrial production, and the associated consumption of natural resources, must continue happily forever — an assumption that ignores the finite character of the planet. Mr. Crawford's game could be more educational and challenging if he armed players with tools to alter the current economic formulas, as well as environmental ones. After all, it is all interrelated.

Save the Planet is a beginning textbook of environmental science and activism, which comes on a disk. It saves a lot of paper (the disk equals a 120-page book, the authors say), and individual pages can also be printed.

"Chapters" appear on a main menu with titles like "CO₂," "Bibliography," and "Environmental Actions and Resources." By clicking the CO₂ icon, you enter a series of

pages. Each focuses on one part of the carbon-dioxide problem: population and petroleum use, measuring methods, even the global carbon cycle — the exotic path carbon atoms weave through plants, animals, and minerals. The lessons are presented in clear, scientific terms, with charts and graphs for illustration.

With its typos and simple graphics, *Save the Planet* is neither as polished and sophisticated as *Balance of the Planet*, nor does it cost as much. It's shareware — after buying the disk, you're free to copy it and pass it on to friends, who are on the honor system when it comes to paying the \$10 registration fee. An update will be sent to registered users in January.

Balance of the Planet runs on a Mac Plus or greater with a hard disk, and on IBM PCs (or compatible) with 512K RAM, CGA, or better, and a hard disk. It's available from retail software stores, or for \$49.95 — add \$3.50 for mail order — from Accolade, c/o Starpak, 237 22nd St., Dept. GM, Greeley, CO 80631; (800) 245-7744.

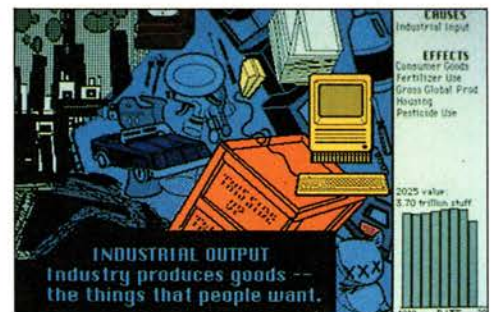
Save the Planet runs on any Mac with Hypercard, and on IBM-compatibles with 512K RAM, either 3.5- or 5.25-inch disk. Send \$15 to Save the Planet Shareware, P.O. Box 45, Dept. GM, Pitkin, CO 81241; (303) 641-5035.

Rolling Recycling Bins

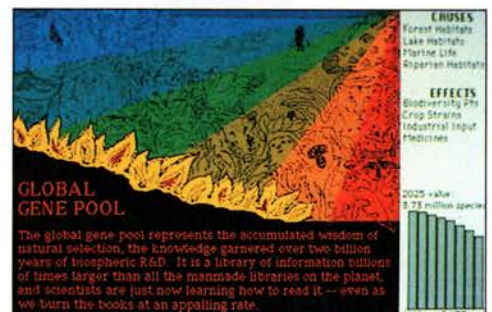
Here at our editorial offices, it took us a while to fill our paper-recycling bin — the big, plastic receptacle that we empty our smaller, personal boxes into. Only when the bin was filled with 75 pounds of paper did we realize it lacked wheels. Oops! So we drag it around by its wire handles.

There are carts made to hold our bins, but there are also numerous bins with their own sets of wheels. Some come in a range of colors including pink, soft gray, and hot yellow —

The game allows you to create an environmental policy — and then pay the price.



Balance of the Planet pits an enviro-ethic against the exec's bottom line.



a welcome change from industrial black or military green. We could have bought others with as much as 100-percent recycled plastic, an important step in closing the recycling loop. Here are the models we should have chosen from:

- Ameri-Kart's 60- and 90-gallon square-top cans come in green or black, unless you're ordering a large quantity. On the bright side, there's a hefty discount and immediate shipping on their factory seconds. Both sizes have lift bars. For more information contact Ameri-Kart Corp., P.O. Box 751, Dept. GM, Goddard, KS 67052-0751; (800) 533-2475.

- Rubbermaid's Square Brute sits on a square dolly, and is colored bright yellow, white, or gray, in 40- and 50-gallon sizes. Instead of lift bars it has handles on the top and bottom. List prices are \$31.80 (40-gal., also comes in blue), \$48.80 (50-gal.), and \$40.70 for the dolly. To locate a distributor, contact Rubbermaid Commercial Products Inc.,

3124 Valley Ave., Dept. GM, Winchester, VA 22601; (703) 667-8700.

- Snyder's Challenger 90 (90-gal.) comes in green or black, and operates on the tilt-and-wheel system. It's \$67.50 plus freight from Snyder Industries, Inc., P.O. Box 4583, Dept. GM, Lincoln, NE 68504; (402) 467-5221.

- Toter's various styles of covered office-bins range from 64 to 101 gallons in half a dozen colors, including mauve, sand, and slate blue. You roll the bins by tilting them backward on their two wheels. They have lift bars for mechanical emptying, and optional security and cans-only lids. Partial recycled content is available on request.

Prices are \$60 to \$85 from Toter Inc., P.O. Box 5338, Dept. GM, Statesville, NC 28677; (704) 872-8171.

- Zarn has two mobile products, a 90-gallon can (about \$60), and the 45-gallon "Mobile Tripod" (about \$38), which encapsulates two smaller bins and a newspaper tray. The containers come in two shades of green, plus

brown, black, or blue. Both models come in recycled plastic if you don't mind dark colors. To locate a distributor, contact Zarn, Inc., P.O. Box 1350, Dept. GM, Reidsville, NC 27320; (919) 349-3323.

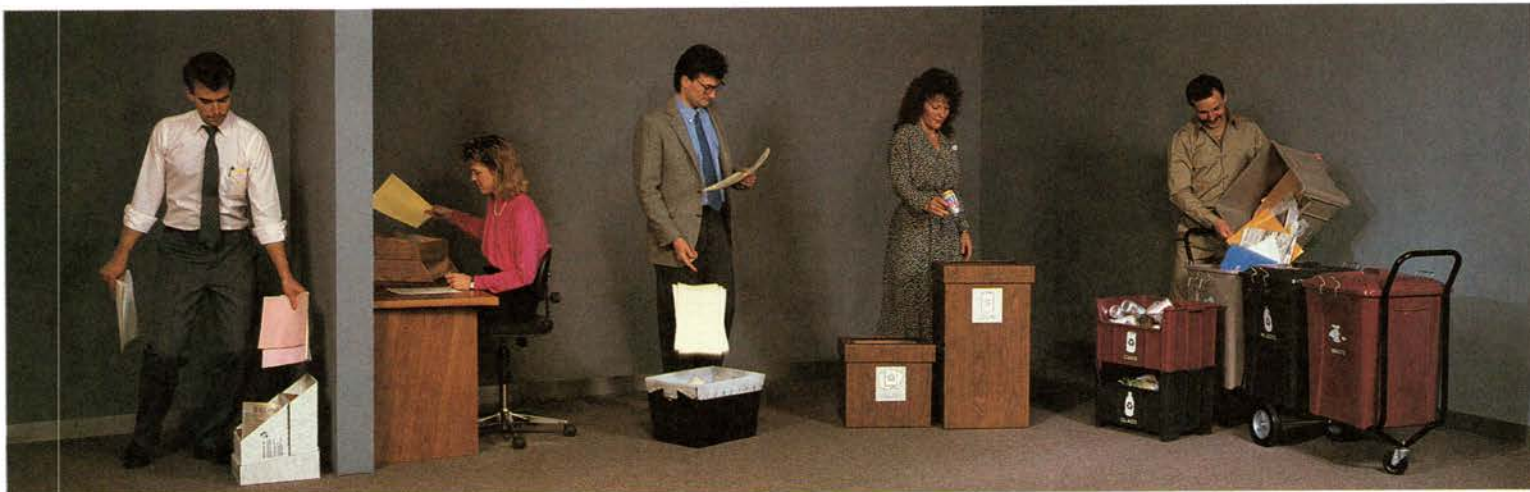
BOOKS

Let it Rot! The Home Gardener's Guide to Composting

by Stu Campbell. 152 pages. Storey Communications, Inc., Schoolhouse Road, RD #1, Box 105, Pownal, VT 05261-9990. Softcover, \$7.95 ppd.

When a recent issue of *Sassy*, a popular national magazine for teenage girls, featured a story on rock singer Michael Stipe's composting techniques, there was no arguing that the earthy science had made it into the mainstream. Yet before backyard waste heaps gained celebrity endorse-

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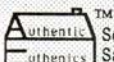
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San Diego, CA 92117 - Alaska/Hawaii/ PO Boxes -- add \$3 per item. Canada -- add \$5, U.S., per item & phone #.

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KEEPERS

ment, and before worm bins acquired cachet, there was *Let It Rot!*, the soup-to-nuts guide to home composting. Now in its thirteenth printing, this handy reference clearly lays out the fundamentals of what some still misperceive as a daunting and laborious procedure.

Suited to the small- or large-scale gardener, *Let It Rot!* covers a variety of composting methods, and discusses the advantages and disadvantages of each style. Information runs from the very basic (where to site your heap, when to turn and water it), to the more technical (how to prevent nutrients from leaching into the ground, how to insulate compost during cold-weather months). Mr. Campbell's catalogue of compostable materials may surprise neophyte and seasoned gardeners alike. Egg shells, spent hops, and leather dust, he tells us, aid in the manufacture of rich compost.

Let It Rot! demonstrates that composting doesn't require a Ph.D. in biochemistry. Mr. Campbell demystifies the microbiology of organic decay. The bacteria and fungi that break down organic material, he muses, are analogous to alchemists and mini-refineries that create valuable materials from spent chemical products.

Just think of your compost heap as a low-maintenance pet. It'll happily consume your kitchen scraps, and it won't need long walks or special shampoos. Autumn is a great time to start composting. By the following spring, your kitchen and yard waste will have been transformed into nutrient-laden fertilizer.

—Ginia Bellafante

EPA Information Resources Directory

by the EPA. 636 pages. *National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. Softcover, \$32.50 ppd. Refer to title and PB90-132192KOF when ordering.*

Ever suspect that EPA stands for Ever-Perplexing Amalgamation? This directory, printed on recycled paper, can help you through the amazing maze that is the U.S. Environmental Protection Agency. The first section maps the

The new EPA directory helps you know your "quench tank" from your "muck soils."

labyrinth of each of the agency's 11 offices. You can see, for instance, how the duties of the Office of Research and Development are split among 41 divisions. An equally useful section is "EPA Contacts," where subjects like acid rain, publications, and radon are listed alphabetically, with the name, address, and phone number of a staff person to contact for information.

Among other sections are 117 pages of "information systems," some of which can be accessed by computer, where EPA keeps records of criminal investigations, enforcement actions, even the open-dump inventory. There's a map that breaks the states into EPA's 10 regional offices, with an address and phone number for each region. There's a directory of EPA libraries and publications. There are also lists of environmental groups, industrial and special-interest groups, federal agencies with environmental divisions, a dictionary of acronyms (know your REEP from your BEEP), and a 105-page glossary of impressive environmental jargon like "limnology," "quench tank," and "muck soils."

Even a directory designed for public use can't take all the mystery out of EPA — the contacts list contains 10 pages of "PC Site Coordinators," but no mention of what such a person might do. (They run personal computers.) And thanks to the mobile crowd at EPA, by the time the guide came out in the fall of 1989, a number of the contact people had moved on. A revision is possible next year, but EPA isn't making any promises.

— Hannah Holmes

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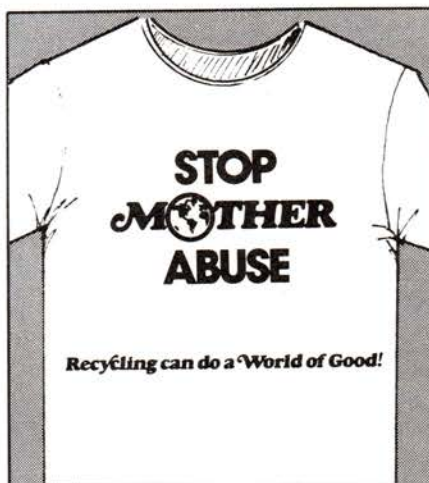
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KEEPERS

Biologic Environmental Protection by Design

by David Wann. 284 pages. Johnson Books, 1880 So. 57th Court, Boulder, CO 80301. Hardcover, \$21.95 ppd.

Places A Quarterly Journal of Environmental Design

The Design History Foundation, 330 West 42nd Street, New York, NY 10036. Subscription: one year (4 issues), \$40.

Biologic, a new book by Environmental Protection Agency Policy Analyst David Wann, and *Places*, the seven-year-old scholarly journal of urban planning, serve as excellent complements for those interested in the relationship between design theory and the environment.

Biologic hinges on the theory that design strategy can be held accountable for most of the environmental ills we now confront. Everything from disposable pens to nuclear plants, from excess plastic packaging to entire cities, Mr. Wann argues, have been conceived in a way that is exploitative ecologically. America is likened to a suburban teenager, eyes glued to a refrigerator's food-laden shelves, barking that there's nothing to eat. He contends that the current fervor to clean up our mistakes has led to some equally injudicious decision-making. Case in point: We employed pollution-scrubbing devices in factory incinerators before we considered restructuring manufacturing processes to reduce the generation of hazardous waste.

Mr. Wann is a bit of a scold, but *Biologic* is more than a diatribe against American consumer habits and thoughtless engineering. It surveys a broad range of "nature-compatible" design strategies that cut pollution and waste. An airport with inclined runways would allow planes to consume less fuel during take-off. Multi-purpose, porous materials in city pavements permit rainwater to soak into the ground, while preventing chemical run-off from leaching into urban waterways. The list continues: from energy-efficient building to improved strategies in cogeneration to solar-powered exhaust fans that eliminate the need for CFC-emitting air

conditioners in automobiles.

The problem with *Biologic* is it covers too much ground. As a result, only cursory treatment is given to each design strategy. By limiting his scope, Mr. Wann might have provided more insight into the sound design of our living environments.

Places, written and edited in part by urban, suburban, and landscape architects, is enlightening. During the last year, the journal has paid significant attention to environmental-impact problems. One issue featured a civic building in southern California designed to better conserve water: Drought-tolerant plants were incorporated into the visually arresting landscape. Another issue looked at conflicting architectural styles in Yosemite National Park, some "nature compatible," others not.

Designs for everything from disposable pens to nuclear plants are ill conceived.

Reverberations of David Wann's theory are distinct in a Summer 1990 opinion piece concerning last spring's ecological cities conference in Berkeley, California. The writer contends that our zealous attempts to mandate recycling and promulgate stringent air-quality regulation are little more than exercises in crisis management. Urban planners, he believes, must grapple with larger design questions if truly ecological cities are to become a reality. Environmental architects need to advocate for open spaces in cities, curb overbuilding, and forge closer connections to sources of food, energy, and water.

In its intelligent presentation, *Places* proves inspirational because it goes beyond commonly touted solutions. It should find a receptive audience among design professionals and concerned laymen. — *Ginia Bellafante*

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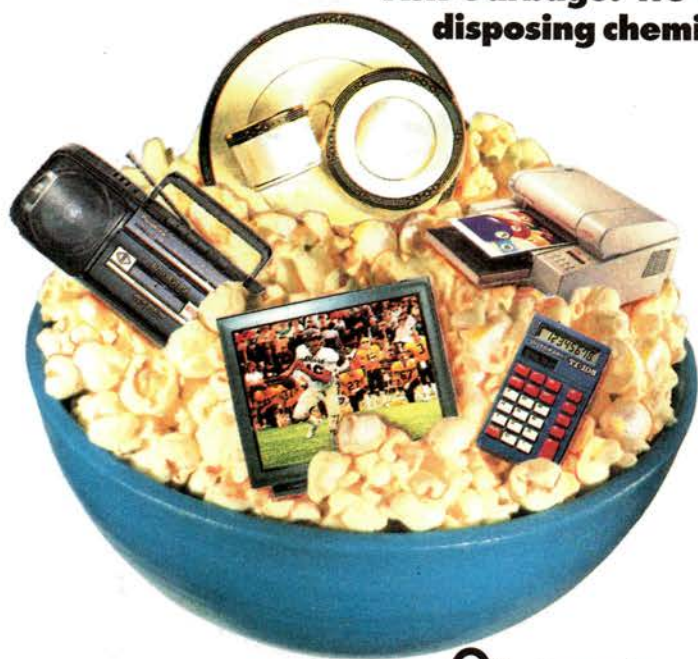
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Susan M. Smith
American Spoon Foods, Inc.
Petoskey, Mich.

A: In a word: yes! Some businesses have cancelled the artificial peanuts and ordered homemade

Popcorn, made at home, is a packing alternative to the use of polystyrene "peanuts."

popcorn to meet their "loose fill" needs. Others are opting for technologies that turn used or low-grade paper into resilient packing material.

Popcorn is easy to try — just pop a batch in an air popper and make a test shipment. Companies that use popcorn for packing often encase their products in envelopes or bags to shield them from the smell. Among popcorn lovers is a small computer-software company that cut its packing cost by 60 percent, simply by plugging in a \$15 household air-popper. Another company has test-shipped light bulbs in popcorn, with no breakage reported. A cosmetics company that ships glass containers buys the fluffy stuff from food-popcorn makers for about the same price as peanuts. Pleased with the results, the company, Sebastian International, Inc., of Woodland Hills, Calif., is investing from \$10,000 to \$15,000 in a commercial air popper capable of popping 150 pounds an hour. Popcorn is compostable, even edible, though this isn't recommended.

Quadra-Pak is a new paper product used for packing. From rejected rolls of unbleached kraft paper (the stuff grocery bags are made of), EcoPack Industries, Inc., makes short, crimped strips of paper that actually expand during shipping. At \$37.50 for 30 square feet

(plus freight from Washington), Quadra-Pak costs about 25 percent more than peanuts: A decorative version costs even more. (EcoPack Industries, Inc., 7859 S. 180 St., Dept. GM, Kent, WA 98032; (206) 251-0918.)

Another product that protects fragile shipments is Padpack, a paper pad. For \$50 to \$75 a month, you can lease a machine that squashes three plies of 30-inch, unbleached kraft paper into a cushion nine inches wide and two to three inches thick. Padpack can be wrapped around items and used as fill. (Ranpak Corp., 4860 E. 345 St., Suite B, Dept. GM, Willoughby, OH 44094; (216) 951-5660.)

Anyone with an office paper-shredder (they retail from \$600 or \$700) can make their own packing material. The Body Shop, which ships cosmetics all over the U.S., supplements Quadra-Pak with collected office paper and cardboard that their \$5,000 industrial shredder turns into springy mounds of paper spaghetti.

There also seems to be a "paper peanut" in the works. Tight-lipped EarthRight Packaging Products, Inc., says only that by the end of the year, its regionally located machines will be spitting out peanuts made of recycled newspaper, which will be priced comparably to polystyrene. (David Henderson, 1 Sound Shore

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— or your profit margin — any favors. If you stick with peanuts, be aware that all polystyrene (commonly known as Styrofoam) is not created equal. First of all, polystyrene loose fill is not made with ozone-depleting CFCs or HCFCs, but with hydrocarbons, which contribute to smog. Secondly, the figure-8 shaped "flo-pak" peanuts are made of recycled commercial and post-consumer polystyrene,

and the company even accepts clean polystyrene from consumers — contact them first. (Free-Flow Packaging Corp., 1093 Charter St., Dept. GM, Redwood City, CA 94063; (415) 364-1145.)

Q: What sort of chemical is used on non-stick cookware? Is it harmful to human health?

Lisa Gambino
Walnut Creek, Calif.

A: The chemical used to treat pots and pans so they won't stick to food and don't require the use of high-calorie/high-fat food oils is polytetrafluoroethylene (PTFE), a chemical- and heat-resistant fluoropolymer plastic. Inadvertently discovered by DuPont in 1938, PTFE (later trademarked as Teflon) has since acquired numerous applications. Today, it is used not only on pots and pans but in copy machine heat fusers, aerospace equipment, and even prosthetic joints.

Not surprisingly, questions regarding the safety of PTFE have centered on its use in cookware. The good news is that studies conducted over the years by DuPont's toxicology laboratory, the U.S. Food and Drug Administration, and various international health organizations have confirmed that PTFE is safe for food-contact. Because it is inert, PTFE does not alter chemically food that's cooked on it. Moreover, ingestion of PTFE particles —

which could result if forceful scrubbing has caused the coating to chip or flake — is harmless.

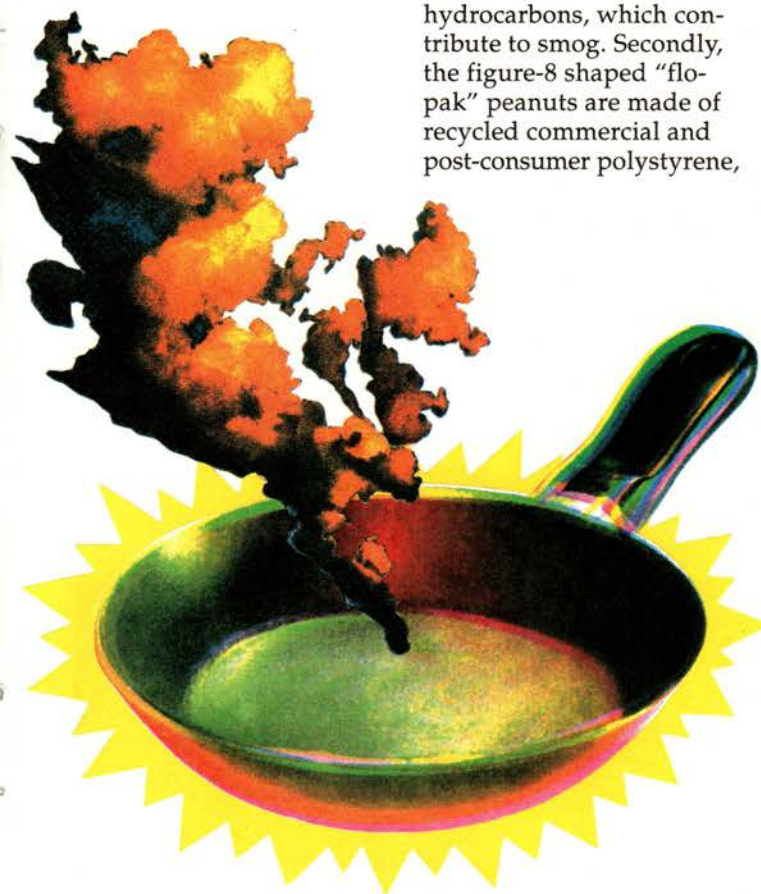
PTFE *does* become a health concern when intense heat causes the material to evaporate. At temperatures above 500 degrees Fahrenheit, PTFE will begin to decompose; at temperatures exceeding 660 degrees Fahrenheit, the material can emit fumes that produce flu-like symptoms in human beings. Irritation of the eyes, nose, throat, and respiratory tract due to PTFE-offgass exposure may last anywhere from 24 to 48 hours. Yet the temporary condition is rare, and currently has not been shown to precipitate long-term health impairments.

Because most cooking is done at temperatures ranging from 200 to 450 degrees Fahrenheit, it's easy to avoid exposure to cooking fumes laden with PTFE. To protect yourself from any potential harm, refrain from using non-stick cookware for broiling, never leave pots and pans unattended, and always ventilate your kitchen when heating PTFE-coated products.

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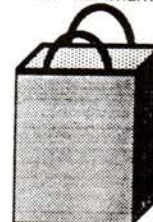
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The idea that by planting a tree we can counteract the greenhouse effect targets a ludicrously tiny piece of the symptom, missing

the disease (carbon-dioxide production) by a mile. Through the burning of wood and fossil fuels, the U.S. produces carbon at a rate of 5.7 tons per person per year. That adds up to 880 trees per person, or about 550 million acres — almost 22 times President Bush's ten-billion tree goal.

Of course, the renewed passion for trees is welcome. Trees accumulate carbon and provide animal habitat and erosion control. They look great and they reduce the energy needs for cooling apartments and houses. But planting a tree is not

a miracle cure for our fossil-fuel-fest hangover.

How about, as well as planting a tree, facing the disease of carbon production? A person who drives six or seven miles to work can liberate *a tree a week* by riding a bike instead. Taking fewer showers, buying goods that aren't transported from far away, and simply consuming less stuff will emancipate more trees. These lifestyle changes require the commitment of more than a Sunday afternoon, but heck, it's a big planet we're talking about saving.



We've cleaned up more towns than Wyatt Earp.



The Dodge City Protection Association, led by Wyatt Earp (seated second from left).

This may come as a shock, but the average American home is loaded with hazardous wastes.

The fact is, a lot of that seemingly harmless stuff we've all got lying around the garage or the basement could be incredibly dangerous.

Like the old jars of paint from the kids' model airplane years. The pesticides from some long-forgotten experiment in home gardening. And the brake fluid and motor oil from the days when do-it-yourself seemed like a good idea.

The memories may fade away, but the hazardous chemicals won't.

However, in city-after-progressive-city, people are waking up to the fact that we can't continue to treat our homes like hazardous waste dumps, and we can't continue to throw toxic chemicals out with the rest of the garbage.

In hundreds of cases, Laidlaw Environmental Services has been called in to help communities manage a series of Household Hazardous Waste Collection Days.

Which makes a lot of sense, because Laidlaw Environmental Services is one of the nation's leading companies in the management,

movement, treatment and disposal of chemical wastes. And one of the leading consultants in helping people clean up their cities.

So, if you'd like to know more about establishing a household cleanup program for your community, give us a call at Laidlaw Environmental Services today.

And we'll help you get the troublemakers out of town by sundown.

L A I D L A W
ENVIRONMENTAL
SERVICES INC.



Snowy egrets take flight in New York City's backwoods.

PHOTOS: BILL BREEN (TOP), ROBERT COOK (BOTTOM), DON RIEPE (BOTTOM LEFT)

Once a Landfill, Now a Wildlife Preserve

Autumn in a wildlife refuge within New York City's limits.... Here, in a wooded corner of Gateway National Recreation Area's Floyd Bennett Field, ducks resting in a one-acre fresh-water pond are oblivious to the staccato sounds of sirens and jackhammers cutting across the traffic-jammed Belt Parkway. Plantings of wild millet and birdsfoot trefoil edge the pond. A 12-foot-high wall of *Phragmites* is broken by stands

of black cherry and quaking aspen, forming the uppermost crown of an eight-foot-deep landfill.



To build the pond, workers first had to dig up the dump.



Seventy years ago, this area consisted of salt marsh, tidal pools, and mud flats spreading into Jamaica Bay. By 1940, dumpers had filled it all in with dredge spoil and garbage. In 1989, when resource managers set about restoring the landscape and building the pond, they knew they couldn't return the area to its natural, pre-urbanization state. "We'd have to remove 1500 acres of landfill to bring back the salt marsh," says Robert Cook, a natural-resources specialist.

Work began in March 1989, when a bulldozer bit into a fill depression, exposing a viscous mass of trash. The dredged soil was used to build a berm along the pond's banks, and an assortment of freshwater flora were planted. The garbage was moved out, and soon great blue herons, snowy egrets, mallards, and black ducks moved in. At Gateway, restoration sometimes consists of reworking severely stressed landscapes, and allowing nature to take its course.

— Bill Breen

GARBAGE

